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SULGRAVE MANOR
THE ENGLISH HOME OF THE WASHINGTONS
FROM THE PAINTING BY STEPHEN REID

Notes from London

Sulgrave Manor, the Home of the Washingtons, and the Threatened London Churches

By Special Correspondence to The American Architect

THE Sulgrave Institution came into existence when, early in 1914, the Washington Manor House at Sulgrave, Northamptonshire, was purchased by the British-American Peace Centenary Committee, in commemoration of the completion of one hundred years of peace between Great Britain and the United States. This institution was organized and incorporated as "an international fellowship for fostering friendship and preventing misunderstanding between the American and British peoples, and

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for the promotion of peaceful intercourse among the nations; and its purpose is to maintain Sulgrave Manor in the future and for all time as a place of pilgrimage for all Americans visiting England, and an active center of work for the furtherance of Anglo-American friendship, the building being equipped as a museum and depository of documentary, pictorial and other records of Anglo-American relations.

The building of Sulgrave Manor—of which, through the kindness of the Secretary of the Anglo-American Society, I am able to offer an excellent illustration—stands on the ground of a pre-Reformation Priory of the monks of St. Andrew, and was purchased in 1539 from King Henry VIII, who had dissolved the monasteries through England, by Lawrence Washington, Mayor of Northampton. Lawrence was a prosperous woolstapler, and built the Manor House, which became the home of the Washingtons. Over the main doorway are the Washington Arms of three stars and two cross bars, or in more exact heraldic language "Argent, Two Bars Gules, in Chief Three Mullets of the Second"; which are reputed to be the origin of the national flag of the States, the Stars and Stripes, and are so described by the poet Tupper:

"For on the spur when we must choose a flag
Symboling independent unity,
We, and not he—all was unknown to him—
Took up his coat of arms and multiplied
And magnified it every way to this
Our glorious national banner."

Unfortunately this interesting coat of arms has suffered from the weather conditions; but in the gable window the letters E. R. with the Tudor Rose and Fleur de Lys of France seem to date from the "spacious times of great Elizabeth." As a matter of fact, not much of the Tudor building remains, but there has survived some interesting Jacobean work, including a good staircase. The house, a gabled limestone building of two stories, with dormer windows, is made up of two blocks at right angles, the south south-east part consisting of a porch and gable, hall and bedroom, all forming part of the original work, while the main entrance was through the porch and doorway above mentioned.

The grave of Lawrence Washington and his wife Amee is in the churchyard of Sulgrave and is marked by the brass inscription which records "Here lyeth ye bodys of Lawrence Washington Gent & Amee his wyfe"; and the great George Washington seems to have been connected with another Lawrence Washington, who married Mary Jones, and with one John, who received a grant of land in Virginia in September, 1667, and from whom, the first emigrant of the family, he was directly descended.

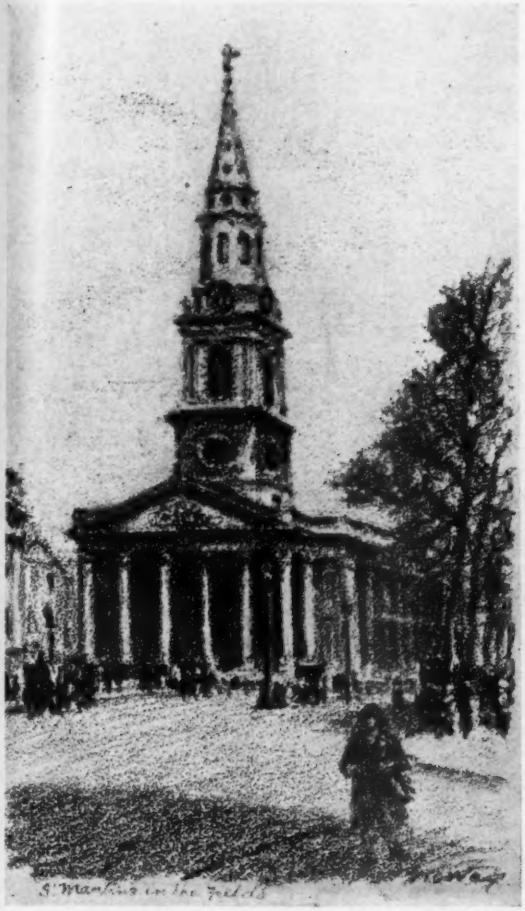
The Threatened London City Churches

THE question of the threatened city churches is still before the public, and in this connection *The Daily Telegraph* is giving an interesting and well informed series of articles on the subject, beginning with the fine church of St. Mary Woolnoth, which is on our right as we stand facing the Royal Exchange and Bank of England. St. Mary Woolnoth is not actually a Christopher Wren church, being designed and built by Nicholas Hawksmoor, his "clerk" and assistant in many of his churches.

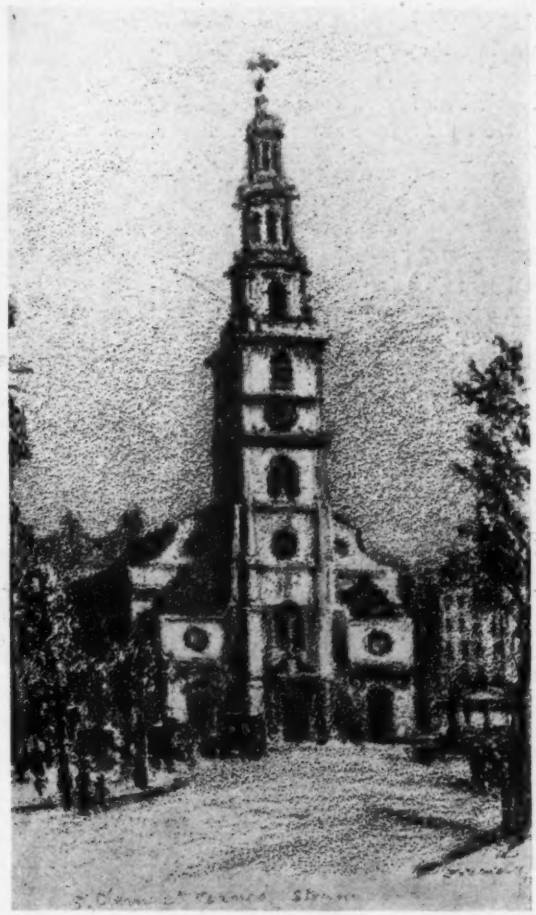
One excellent practice in the most of these city churches is that they are to be found open for three hours in the middle of the day, organ recitals being sometimes arranged. I visited three of them, including St. Mary Woolnoth, all within an easy walk of St. Paul's yesterday, between midday and the lunch hour, and found them so interesting that I propose to renew the experience with others. St. Mary Woolnoth, at the corner of Lombard Street and King William Street, and close to the Mansion House, has a fine frontage, and does justice to its position. The tower is especially remarkable. Over a severely grand and massive rusticated lower story Hawksmoor set his pedestal for the support of four composite columns against a plain surface, with the belfry window placed in the center. Above this again he put two turrets, connected with a balustrade, avoiding thus any spire, such as we find hard by at St. Stephen's, he gave us a tower which is original and striking, while we must go round the corner into Lombard Street to see the man's inventive fancy, which has filled an ugly blank wall with an attractive design.

Within the building is a square in length, width and height, the total width equalling the height to the ceiling panel, and the whole effect of the building is singularly pleasing. At the angles of this atrium lofty fluted Corinthian columns are placed in groups of three in the angles of the square, supporting a rich entablature, above which rises a clerestory whose sides provides the lighting with four semi-circular windows. The whole building, like St. Stephen's Walbrook, is flooded with light, and this, together with the fine proportions, is part of its attraction. The wood-carving is frequently excellent in these churches of the Wren period in London, but

here the side galleries have been removed—regretably, for they formed an integral part of the design—and placed against the walls at the side only the small gallery, containing the organ, and decorated with the banners of the Goldsmith's Company, have been left *in situ*. It is fortunate that the side galleries, with their bold carving, were not destroyed. As it is they survive, but in a meaningless and useless position as wall covering.



ST. MARTINS IN THE FIELDS



ST. CLEMENT DANES, STRAND

St. Mary Woolnoth is a very ancient city building, its records going back to 1274, and even earlier. The gift of its living belonged to the nuns of St. Helen's Priory, Bishopsgate, but when Henry VII destroyed and robbed the monasteries of England he gave this living to a rich goldsmith, Sir Martyn Bowes. After the Great Fire of London Wren was called in to patch up the shaky walls, but the building was so unsound that, as Wren himself was by that time too old to undertake further practice, it was given to Nicholas Hawksmoor to create the fine church still existing. Its site is so precious that it has had more than one narrow escape, having been priced for sale in 1863, and saved by the energetic resistance of Lord Mayor Rose, a parishioner of this church, and its vestry. The post office set covetous eyes upon it, and the City and South London Tube successfully annexed its old crypt, placing the church upon steel girders.

The same railway company are responsible for defiling the lower portion of the building beside the west door with tasteless and hideous advertisements. These ought to be removed—and would be if Londoners took any proper pride in the aesthetic aspect of their old city—and the church itself preserved as an integral monument of bygone faith and high architectural merit.

We need turn back only a few paces, beside Dance's classic front of the Mansion House, to find

one of Wren's masterpieces, the church of St. Stephen's, Walbrook. The attraction here within is the central dome, set on Corinthian columns, and flooding the building with light. The whole effect is wonderfully graceful and harmonious in its design. An old print on the walls gives the interior as designed, and is dedicated to the master as "one of the Noble Proofs of Superior Genius."

Here the square tower, with a spire, is not equal to the interior, but that of St. Martin's Ludgate forms a grateful addition to the beautiful view of St. Paul's, looking up from Ludgate Circus. I can imagine no more delightful morning for any lover of architectural beauty than that which could be filled in going round a selection of these city churches, with perhaps St. Paul's itself as a finale; and with these should be included at some time or other those lying more west — St. Clement Danes, St. Mary le Strand, St. Martin's in the Fields, St. George's Bloomsbury and St. George's Hanover Square.

ST. MARY, WOOLNOTH

An interesting discovery, especially in connection with the recent celebrations of the sailing of the Pilgrim Fathers, held last month at Southampton, is that the hull of the famous "Mayflower" may have been built into the walls of a barn at Gerrard's Cross. Dr. Rendel Harris, who claims to have made this discovery, has recently addressed a group of interested listeners from the Celebration Committee at Old Jordan's Hostel, near Gerrard's Cross, within a stone's throw of the burial place of William Penn, The farmstead is now made into a Quaker hostel, and near this is the barn, some 60 ft. by 30 ft., which Dr. Harris claims to contain the timbers of the "Mayflower." He bases his argument on expert evidence and dates, the "Mayflower" having been, as he states, broken up in 1624, and the barn built in 1625, the appraisement having been made in 1624 by three out of the four owners of the pilgrim vessel.

Dr. Rendel Harris informs me today that he is this month publishing with Messrs. Longmanns, of London, the results of his researches, under the title of "The Finding of the Mayflower," so that I reserve any further discussion of this interesting suggestion, as I may have something further to communicate at a later date. If, in the course of examination of the building in question, some detail, definitely connecting itself with the vessel which carried the Pilgrims, could be discovered, this would obviously strengthen the claim very considerably, but we have yet to learn that this is the case.

Architectural Quicksands

By CLINTON H. BLAKE, JR.

SUPERINTENDENCE.

THE average architect would probably be astounded if he were told that in many ways his profession is similar to the legal profession. His natural off-hand impression is that the two professions are so wide apart as to have no substantial similarity to one another. As a matter of fact the architect, in placing himelf before the public as a practicing member of his profession, assumes exactly the same responsibility, for reasonable skill and care in the practice of his profession, as that which rests upon a lawyer, or for that matter upon a physician. Like the lawyer the architect is acting in a position of trust and confidence; like the lawyer he is the authorized agent and representative of his client, within the scope of his employment; like the lawyer he is assumed to possess by reason of his calling, special skill and ability in the practice of his profession; like the lawyer he is under definite obligations to the public, to practice his profession with proper care and diligence, and in all work relating to the construction of public buildings, used generally by the public or by special classes thereof, to conduct himself with the reasonable skill which, as an architect, he is assumed to possess. It is not necessary that he be possessed of extraordinary skill, but he must at least be possessed of sufficient ability and training so that he will be generally considered by other architects as possessing a reasonable degree of professional knowledge and skill. He must, also, as a lawyer must do, gauge his skill and services by the necessities of the case which he is called upon to handle. If he undertakes any work, his undertaking of it is, in itself, an implied representation that he is capable of carrying it out and of securing the result desired, with reasonable and proper skill.

In designing country houses certain elements of skill will be demanded which will not be called for in ordinary city residence or commercial work. On the other hand, the city practitioner is expected to give attention to city ordinances, building regulations and the like, to a much greater extent than does the architect practicing in the country. In defining reasonable skill and attention, as applied to the particular job involved, it is natural that the superintendence side of the work should be the one which, more than any other, creates situations as a result of which the architect is subjected to a claim by the client that the architect's work has been negligently performed. Many clients have a totally erroneous idea of the connotation of the word "superintendence," as applied to the duties of the architect. A surprising number seem to feel that the agreement of the architect, to superintend the work, is tantamount to a covenant on his part to personally overlook the placing of every stone and every detail of construction generally.

A litigious client helped to establish the law on this point a great many years ago. The front parlor windows in the building which was being constructed by him were so constructed that they were between two and three inches higher than indicated on the plans, and the same distance higher from the floor than the rear parlor windows. The reason for the difference was that the masons had not properly followed the plans and specifications. It appeared that the architect had been diligent in his attendance at the job, and that no fault lay with the drawings and specifications. The client claimed, in effect, that the mere existence of the difficulty was proof of the negligence of the architect and that the failure of the latter to detect the difficulty constituted a negligent supervision by him of the work, to such an extent as to render him liable to the client for damages. The case was finally carried to the Court of Appeals of New York, argued at length, and decided in a rather detailed opinion in favor of the architect. So much expense and controversy may a matter of two inches cause!

The Court went to the root of the matter, when it said that the architect was not under any obligation to measure the lumber and make actual measurements on the ground, in the erection of the building; that the contract with the mason provided that the latter should "lay out" his work, and that the difference was not such that the knowledge and skill of a good architect should at once have detected it. In another, very similar, case, it was claimed that the architect was negligent, in that certain of the flues were not sufficiently large. The client tried to defeat all recovery of compensation on the part of the architect, on the ground that, if the architect had furnished proper plans and superintendence, the flues would not have been defective, and that the contract was what is known as an "entire" contract, and that a breach of any part of it must be considered therefore as a breach of the whole. The Court, as was proper, allowed the client compensation for the faulty flues, but it refused to countenance his attempt to escape his obligation to make payment for the balance of the work. It quite properly pointed out that an architect is not bound to spend all of his time at a building which is being erected under his care, that he is not in any sense an insurer of the perfection of the plumbing

or carpentry or masonry work, and that he is not expected to watch the turning of every screw and the driving of every nail.

The above reference to the driving of a nail brings to mind a recent case in which I represented an architect in a claim against a man rather well-known in business and public life. The architect had built a really beautiful home for the client, but the latter was dissatisfied. About a year after the house had been completed and paid for, his bill remaining unpaid, the architect pressed the client for payment, and the latter submitted a long list of grievances. Prominent among these was a harrowing history of how the bathroom pipes had leaked, and how the local plumber had been unable to stop the leak, with a resultant damage to ceilings and hangings. The architect very decently sent down one of his head associates to look into the complaint, and it then developed that the whole trouble came from a leak in a leaden pipe, due to the fact that a nail, in the course of construction, had been driven through it.

When the case came into my hands, the client, in a number of successive interviews, was most vehemently and sincerely outraged at what he termed the incompetence and the neglect of the architect, in allowing such a situation to arise. He failed utterly to grasp the fact that no architect, under the most stringent rule, could be regarded as under an obligation to see that every nail driven reached its proper mark and that none was so deflected as to cause damage. He insisted that he had employed the architect to superintend the work and to see that it was done properly, that no mischance of this sort should occur, and that each detail, important and unimportant alike, should be carried out, literally and absolutely, in accordance with the specifications and plans and without a hairsbreadth deviation therefrom. Finally, the client became sufficiently reasonable, so that he made payment of the architect's account. He is still convinced, however, I am sure, that the architect was grossly negligent in failing to see that particular nail driven in the first place, and if not, then that he was certainly negligent in failing to investigate and to check up the driving of the nail, after it had been driven, and before the floor had been laid. An instance of this sort appears, of course, laughable and in many ways a triviality. As a matter of fact, it may mean, as the case cited meant, a loss of a considerable amount to the architect in time and expense, and a much more serious loss, perhaps, in the dissatisfaction of the client.

A somewhat similar incident came to my attention about a year ago. The architect, in designing a country house, had provided outside blinds equipped with a standard form of hinge and lock, in use generally throughout the locality in which the house was erected. About six months after the house had been completed, the blinds were torn from their hinges by the force of the wind, and it was then found that, to prevent any possibility of a recurrence, it would be necessary to substitute a heavier form of hinge and catch. The architect gladly had this done, giving considerable time, both himself and through his organization, to this and other similar details, in an effort to give the utmost service to the client. The latter was not to be appeased, however, and held up the payment of the architect's bill in toto, claiming that the architect should have known, in the first place, that the hardware used was not sufficiently strong, and that in the second place, if he had given proper supervision to the work, he would have gauged more accurately the force of the local storms in the locality, and seen that hinges sufficiently strong to resist them were employed. If the much abused law was as unreasonable as are some clients the practice of architecture would, indeed, be an uncertain and hazardous undertaking.

Personal Supervision by Architect.

Another thought all too generally held by clients is that supervision by the architect necessarily means supervision by him, personally, at all times. The employment of the architect, is, of course, a personal employment and the architect can not delegate his authority to others, as it is upon his skill and character that the client relies, just as a client similarly relies upon the abilities and standing of his lawyer or his physician. Nevertheless, it is evident, that no architect with a large practice and busy office can himself in person superintend every job during all of its stages. Unless the client specifies specifically that the architect himself is to attend to the supervision work, therefore, superintendence by the architect through competent subordinates and associates in his office and organization, of details which he can not personally supervise, will be sufficient, and will be legally considered as supervision by the architect himself. As a practical matter this very often displeases the client, however, and I imagine that every architect has encountered that peculiarly aggravating case of the client who thinks that the architect has nothing to attend to, other than the particular job in which the client is interested. This is a situation in which I can truly sympathize with the architect, as a fellow professional man, and at the same time it is one which can not be disregarded, but must be so handled that the client may be at once satisfied and his interests properly taken care of.

About six months ago a particularly aggravating case came to my attention. A client of mine in New York was architect for a very large and beautiful

private home in the South. The client, a man of considerable wealth and standing, was, nevertheless, arbitrary and unreasonable to an unusual degree. The architect had, I suppose, in this particular case given fifty per cent. more personal time and attention to the sketches, design, specifications, drawings and superintendence than he would be called upon to give in any ordinary case. He made trips to the South and personally looked over the building on a number of occasions, and he had had exceedingly competent men from his organization assigned to the job and giving strict superintendence service in connection with it. Unfortunately, the client and the architect, through some misunderstanding or for some other reason, failed to meet on one or two of the occasions when the architect inspected the work. The client became unreasonably annoyed, or claimed to be so, and refused to make payment of the architect's fee, claiming that he was entitled to the personal supervision of the architect, that the latter had merely sent a few "clerks" to look over the job, and that he would not make payment of the amount due. The result has been that we have been forced to bring suit for the substantial fee which is due.

It is difficult to avoid a situation of this sort. Of the ultimate result I have little doubt, as the architect will, I think, have no trouble in establishing his claim and securing judgment. On the other hand, it is a great unfairness to him that he should be forced to go into court in the matter. Here again, "definiteness" seems to be the most available remedy. If the client and architect have a definite understanding in the form of a contract and if it be understood that "superintendence" is not to be construed to mean superintendence necessarily by the architect personally, but merely superintendence by his office, through a competent representative or, if desired and so specified, by a "clerk of the works." then the client will necessarily realize that he can not sustain any such claim as that made in the case to which I refer, and will make payment of his just debt to the architect, accordingly.

In general, the question of whether the architect has been negligent and whether he has shown reasonable skill and diligence in the performance of his duties, is a question of fact, rather than a question of law. As such, in case of legal procedure, it is to be determined by the jury in the last analysis upon all of the facts presented.

I have already referred, in a prior article and in another connection to the important bearing which the agency of the architect bears to the relations between him and the client. The architect, as the agent of the owner, is probably more concerned with the matter of superintendence than with any other phase of his agency relationship. As the superintendent of the work he will, in all probability, be called upon more frequently than in any other capacity, to act for the owner and as his representative in matters involving large sums of money, to construe the extent and scope of the agency which has been granted him, and to pass upon questions of vital interest to the owner and to himself. I suppose that every architect, in the course of his practice, is confronted frequently with a situation where he believes a change in the specifications or plans is advisable. No matter how clear he may be in his mind that it is in the interests of the client that the change be made, let him beware of assuming that his authority, as supervising architect, carries with it any right to alter or change the conditions of the building contract. The architect, as happened in a case which I have before me, may tell the contractor "to go ahead and do the work" as the architect directs, and that the contractor will "be paid for it." If the owner does not back up the architect no amount of statements of this character, no matter how definite, will enable the contractor to collect the amount due from the owner, if the contract provides, as is usual, that any additions to or deviations from the plans or specifications shall be approved in writing by the owner. The result may well be the possibility of suit by the contractor against the architect and general misunderstanding and difficulty.

Back in 1894, in New York State, a building was being erected under specifications which provided that a certain cement should be used, mixed with equal parts of good sharp and dry sand. There was also the provision, similar to the provision so commonly used at the present time, that all disputes regarding the true construction of the specifications should be decided by the architect, and that the latter's decision should be final and conclusive. The contractor, in the course of the work, changed the cement mixture, as specified in the agreement. The unfortunate builder, who had apparently acted in good faith, submitted proof that he had been told by the superintendent of the job to mix the cement as he had mixed it, and that the architect had directed him in writing to follow the instructions of the superintendent in every particular. The Court of Appeals held that no change in the mixture could be authorized, without the consent of the owner. To have allowed this to be done would have, in effect, allowed the architect to make a new contract for the owner, and it is well settled that the employment of an architect, to superintend the erection of a building and to see that the contractor properly performs his contract, does not vest in the architect any authority to make any new contract, in the stead of the old.

XUM

Housing Plan Suggested by Labor Party

LABOR must be given a responsible part in any successful housing programme, states Frank E. Hill in the New York *Globe*.

Participation by labor becomes possible with the extension of state loans for housing and the creation of state housing boards.

These boards should contain definite labor representation, and should encourage the formation of non-profit-making societies of architects, builders and workers which could employ state funds for furnishing houses to the laboring classes.

These are the conclusions of certain labor specialists, architects and workmen. They have just been adopted at Schenectady by the American Labor Party. They are believed by Ordway Tead of the Bureau of Industrial Research, a member of the committee of experts which drafted a plan at the request of the American Labor Party, to offer remarkable promise for a solution of labor difficulties in connection with present day construction. According to many who meet labor in a practical way in the building field, such a plan has a promise of success.

It is generally admitted that the present labor situation is unsatisfactory. Wages are high. In many cases the men insist on a ten-hour day with two hours paid at overtime rates. Labor of all kinds is scarce, and skilled labor is scarcest of all. It has gone into the factories and into transportation service where brawn can command high rates at loading and unloading. That disagreements and strikes frequently interrupt building operations is the general testimony of both speculative builders and architects, and even when work is done it is often not as efficient work as was performed ten years ago.

The plan of the American Labor Party, in Mr. Tead's opinion, will strike at all of these evils.

"One of the great difficulties," he declared, "is as usual a psychological difficulty.

"The plan which our committee worked out for the Labor Party seeks to change the entire viewpoint of the worker.

"He will have representation on the state board and the local boards handling the state financing of housing which it is proposed to initiate.

"He will become a member of the non-profit-making organization, which can in many instances handle the housing problem under state direction. He will thus assume responsibility. Building will be his job as well as that of the man who happens to be directing building. It will furthermore in many cases be construction for those of his own class.

"Part of our programme also provides that the workman will be given opportunity to study building as a whole—an opportunity which has been taken up by workmen when, as in the case of the bricklayers of Philadelphia, it has been offered.

"With a definite representation on the part of labor in building activity, it will also become possible to guarantee steady employment.

"If this can be effected, it will remove the cause of much existing difficulty. Unquestionably workmen are in many instances not giving full measure. They are afraid their jobs will not last. Remove uncertainty about the job and you remove the willingness to give rapid and efficient service. Of course we know that with the present 50,000 house shortage in New York, and lack of housing in proportion in our other cities there is no danger of work running short for years to come. The time is ripe for the state to create an organization which can encourage group effort, which will in turn organize workers and builders for cooperative effort. Such organization will guarantee our keeping unemployment at the minimum in any future time of a scarcity of work."

The committee of which Mr. Tead was a member was not a committee of members of the American Labor Party. On the contrary, although it contained one party member, it was composed for the most part of men chosen for their expert knowledge alone. It included John Russell Pope and Clarence S. Stein, both well-known architects, and the latter secretary of the governor's housing committee. John A. Fitch, Alexander A. Bing and J. M. Budish were besides Mr. Tead the remaining members.

The basis of the machinery for bringing labor into the housing problem is the establishment of the state and city right to furnish building credits. This, will require a constitutional amendment, and the amendment, in order to be effective as soon as possible, will require a special session of the legislature.

When the state and the municipalities have the power to lend money, this power will be exercised through housing boards such as the Housing Committee of the State Reconstruction Commission has advocated. The members of these boards, if the American Labor Party had its way, would be composed of representatives of those interested in building—tenants, workers and architects. These would be chosen by the governor or mayor, according as to whether the board was state or local, from panels furnished by those to be represented.

The state and municipal credit would be made

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available by state and city bonds, which could be floated at a lower rate of interest than bonds of private companies. Through these bonds housing boards would be able to influence building activity. Unquestionably one result of such influence could be the building of working-class housing.

The programme which Mr. Tead supports would also have a provision for the control of building materials. If necessary the state and its municipalities could go into the extraction of their materials and their preparation for use.

Non-profit-making organizations are to be encouraged "as soon as the brain and hand workers see the advantage" of forming them. These are expected to eliminate all but legitimate profit, and are preferred to state or municipal activity as giving greater spontaneity of effort.

This is the plan of the American Labor Party in so far as it affects labor itself.

It is an interesting plan because it is the only one recently advanced here which considers the worker as of sufficient importance to give him a place in the working machinery by which housing is to be secured.

I do not pretend to say how practicable this plan would be. Certainly it agrees with unbiased authority on the housing problem in so far as state direction and encouragement of building is pronounced necessary by it. It agrees with much that I have heard in the course of several months of observation and study of construction in New York with regard to the psychology of labor.

"Labor," said one of the most prominent architects in the city to me, "has made its mistakes and has its vicious practices. At the same time it must be remembered that capital sets it a bad example. If you ask a man to play fair you must play fair yourself. Labor is asked by capital to give steady, hard work at a fair price. But labor sees capital erecting an apartment house which it at first will rent at $9 per room, then at $15, then at $25, and which before construction is finished it will refuse to rent at all, but will sell at a fabulous profit. Labor sees hotel and office buildings going up which it knows will bring capital tremendous returns. Why shouldn't the idea come to labor that it might get in on the game itself? It strikes for more wages, and more. There may not be a justification for the strike, but there is an explanation."

"Let labor know that the job is clean," said another man connected with the building industry, "and I believe you can depend upon it to be square."

Now the plan I have sketched above at least has the merit of providing for a machinery of encouraging housing which would gain the laborer's confidence. It will represent his class officially, and it will be calculated to furnish what we are not at present getting—houses for people of moderate means. If his co-operation is worth having, there may be something in the housing plank of the American Labor Party which New York ought to have.

Book Note

Analysis of Paint Vehicles, Japans and Varnishes. Full cloth, 200 pp., 5¼ x 8 inches, New York, John Wiley & Sons, Inc. London, Chapman & Hall, S. W.

PAINTS, enamels and varnishes used as protective coatings for such surfaces where they may be properly applied, are the armour that resist attacks and wards off the insidious influence of changing temperatures, the action of the elements and the disintegration that accompanies the hazards of constant use. It is to groups of men like the author of this extremely technical and at the same time very practical volume, to whom we are indebted for the realization of the urgency for systematic methods of analysis, and who have labored experimentally in the direction of discovering the possibility of the utilization of many vehicles hitherto ignored.

This book is one of twenty chapters, each treating very thoroughly of a certain medium, its use and availability. The result of this painstaking laboratory work will be the better compounding of paints.

Most pigments in their crude state are permanent and reliable. It is when the "medium," the fluid to make them applicable to surfaces, is introduced that deterioration sets in and the purpose for which the protective paint is used becomes useless.

It is this careful method of analysis of mediums employed that insures the durable and efficient quality of paints, enamels and varnishes, and it can therefore be readily understood that the careful attention to the valuable suggestions and formulae set forth in this book gives the paint user a basis of absolutely certainty.

XUM

Group Ownership of Apartments

A Method Being Tried Out in Many Cities in the United States With a Varying Degree of Success

THE shortage of apartments in our large cities and the abuses perpetrated by profiteering landlords and speculators in apartment houses have brought about the widespread development of group ownership of apartments. *The National Real Estate Journal* (Chicago) can not say whether this species of ownership is a temporary phase of the existing scarcity or whether it will prove a permanent form of residence-property ownership, but, at any rate, "it is being tried out in a number of cities and is attracting considerable attention." This organ of the real-estate business proceeds to explain the workings of the new plan to its readers by quoting this article on the subject from the Washington *Times:*

The co-operative housing plan as applied to multi-family houses is the sale of the building to the tenants or to a group of people who become tenants of it. This plan, while worked out independently, has many points of similarity with the so-called co-partnership housing schemes abroad. Several such enterprises have been started in which the co-partners rent their homes from a corporation in which they are stockholders. In this way, if they are compelled to move by reason of a change of employment or otherwise, they can surrender their homes and move in a new locality, at the same time holding their stock interest in the corporation if they choose, which pays them a dividend.

The co-operative housing plant, as adopted in other cities, is to meet the needs of people whose incomes range from $3,000 to $5,000, and who seek the comforts of living in apartment-homes and wish to protect themselves against excessive increases in rent.

There are a number of co-operatively owned apartments in New York, but these have usually been confined to buildings owned by people of large means, who take perpetual leases upon their apartments, and when not occupying them either sublet or pay the rent themselves. This scheme is not applicable to people of moderate means, who frequently are compelled to move because of change of employment and other reasons and cannot afford to assume the responsibility of possibly paying rent in two places.

To meet this situation and at the same time prevent a possible deterioration in the tenancy of the building the lease of the apartment and the ownership of the building have been kept separate in the co-operative-ownership plan, except that in the first instance the tenant and the owner are the same person. Literally, each tenant is his own landlord. The equity in any building above the mortgage, usually a savings bank or insurance company mortgage of long term, is capitalized by the formation of a corporation to take title to the building. The tenant-owners each subscribe for an amount of stock in proportion to the size of the apartment which they occupy.

The tenant-owner at the same time that he purchases the stock leases an apartment at the current rent, renewable from year to year indefinitely at the will of the tenant, but with the option that, upon notice before July 1 in any year, he may surrender his lease the following October 1.

The corporation of tenant-owners, of which each tenant is a director, makes a contract for the management of the building with some competent real estate agent.

The agent collects the rent, makes all the disbursements on account of the operation of the building, and what is left comes back to the stockholders as a dividend upon their investment. It will thus be seen that the tenant-owners have no burden in connection with the management of the building, and are only required to meet once or twice a year as directors of the corporation, of which they are stockholders, to declare a dividend.

The by-laws of the corporation are framed in such a way that at all times the market rent of the building shall be the rent charged. Of course, as regards the original tenant-owners, as long as they occupy the building they are protected by their leases, but the purpose of the provision to require the market rent at all times is to protect the tenant-owner who ceases to be a tenant and remains interested in the building from an investment standpoint.

The question is often asked, "Why not sell a man an apartment instead of a stock interest in the building?" There are two reasons. One of them has been referred to—namely, the tenant who moves away is not held responsible, if he owned his apartment, to find a tenant or pay the rent himself.

The second reason, of more importance to the tenant-owners, is to protect them in a possible deterioration in the tenancy of the building, which might arise if one of the original owners through some reverse of fortune might sell his stock at a low price to an undesirable person. If the stock

carried a right to the apartment this person could demand the occupancy of the apartment and thereby cause annoyance to other occupants of the building reducing the value of the investment.

Under the co-operative-ownership plan there is, of course, no restriction upon any tenant-owner to sell his stock and a situation might arise where the stock would be sold to some undesirable person, but such purchase of stock would not carry the right to occupy an apartment.

New Apartment House Plan Has Developed Good Results

AMONG the architects who are trying to afford relief in the housing situation in New York may be mentioned the firm of Warren & Wetmore. This firm is reported to have prepared plans, the execution of which will not only greatly reduce present rents and minimize housework, but will also very much increase the return to landlord or owner.

Buildings are already being erected on this basis.

It is no longer possible, according to Mr. Julian Holland, of Warren & Wetmore, for owners of property to continue the development of apartment houses with the old scheme of extensive floor plan and construction without tremendously increasing rentals, and the housing problem will never be solved in the increasing expansion and congestion of New York. The available land is almost all taken—the zoning laws which prohibit building above certain restricted heights in various parts of the city have automatically made lateral or longitudinal extension impossible.

Accordingly, says Mr. Holland, the inevitable development must be in restricting the size of apartments, in such a way as will meet all sanitary and fire laws, satisfy the tenant and afford general satisfaction and real hominess to the suites.

In the first application of these principles, the designing of a California type of apartment house on West End avenue, between Eighty-eighth and Eighty-ninth streets, the architects have attempted to solve the problem of aiding both tenants and landlord. The system, adapted to New York needs and restrictions after several months of intensive study, is simplicity itself. It applies to the dwellings of the congested tenement districts as well as to the west side.

On a plot of ground 60 by 100 feet they have been able to get a maximum of 70 per cent. of building usage—affording courts on either side of the thoroughfare frontage and a rear areaway on the plot in perfect accordance with the tenement house regulations.

The unique feature is that instead of three five-room apartments on a floor of 4,800 square feet net, two front and one rear apartment facing only brick walls—the maximum obtainable under the present general custom, there are four apartments on each floor, all of which have a view of the thoroughfare, West End avenue. This arrangement secures cross ventilation and sunlight in the rooms of every apartment, with good drafts of fresh, clear air during the hot weather.

The system of floor planning simply reduces the arrangement to a twenty-four-hour usage of every room in the California type of apartment. By day the living room and the dining room are used by the family and guests without the slightest suggestion of bedrooms. The drawer beds of a newly designed type pass through oblong spaces in the walls, without being attached to the building and without folding up. They are complete beds and their only evidence in the living and dining rooms is in the form of the lower drawers of escritoires and china closets, respectively, while the bodies of the beds are extended, fully made up with pillows and headboards, into two dressing rooms behind the larger rooms, where windows opening to the outer air—not air shafts—give complete ventilation while not in use.

At night these beds are drawn out into the two larger rooms, and consequently there is no loss of living space in the commodious apartment.

At present in New York apartments the bedrooms are a sheer waste of space for at least fourteen hours a day, while for the remainder of the time the living and dining rooms are wasted through non-usage. The New York type of apartment contains, for five rooms of approximately the same proportion, about 1,600 square feet; the California type not more than 1,200 square feet. This means a saving of twenty-five per cent. on the floor space per apartment, and consequently a greater rental receipt for the landlord, a reduction in the price of rent to individual tenants and better living conditions.

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Detail of House on Washington Square North, New York

(See reproduction of the original drawing by O. R. Eggers in this issue)

THIS interesting detail of a house on Washington Square North, in New York, is pendant to a view of the portico of the same building illustrated and described in a previous issue. This Ionic detail is the porch at the rear with a glimpse of the house and iron balcony and fence. The view is looking north along Fifth avenue. The trellis is evidently of later placing but having been well designed adds to the generally good effect.

The house, standing at the southmost edge of Greenwich Village, shows an example of the hand wrought iron that was so extensively used in that section in the early part of the nineteenth century. Every well considered element of good design was lavished on the railings, porch rails and balconies of these houses. Unfortunately much of this good iron work has disappeared, but there are yet extant, if one seeks them out, many examples to prove how carefully the architects of those days designed every detail that formed a part of their buildings.

Neighborhoods in the early thirties were more nearly communities than they will ever be again. Here on summer evenings either seated on the balconies or on the "stoops" there was much visiting to and fro. It was for this reason that these places became as much a location of social activities as did the drawing rooms of the interiors during the winter. The same pride of well designed surroundings was ever present.

The yard at the rear of this house abuts on the easterly end of Macdougal Alley, widely known as the place where numerous artists of fame, wealth and social position have created a picturesque locality, the mecca of every rural visitor to New York.

It is pathetic to men born and residing in New York for more than sixty years to mark the changes that have occurred in the Washington Square district. In the early 70's, North Washington Square, on which is located the subject of this sketch, was occupied by the stately houses of those among whom the late Ward McAllister counted the "400" as constituting the very cream of New York society. These one-time prominent people have with few exceptions moved from the neighborhood. The aristocratic seclusion that was once maintained became no longer possible. The towering apartment house, the church settlement, on the south, and the gradual encroachment of an undesirable lot of citizens have robbed the neighborhood of its semi-isolation.

Yet, today, there may be seen a solitary but well appointed carriage with two well groomed horses; on the box a portly coachman and by his side a slender footman, both in the most correct livery. There they await the coming of the mistress of the house who in spite of the dangers of the swiftly moving motor car, proceeds to ride as she has done for many years past, up Fifth Avenue and into the park for the daily airing.

But the march of progress is irresistible. It will not be long before this, last of an old order, will have passed, and we shall only know customs as recent as a quarter of a century as traditions.

Noise in the City Streets

Is noise inseparable from progress? asks the New York *Commercial*. We are accustomed to speak of the "roar of a great city" as if it were something unescapable. Perhaps it is, but not all of the clatter and bang is essential, nor need be tolerated. The racing through the streets of heavy motor trucks has increased tremendously since the war, seemingly driven by daredevils who obtained their schooling in France, driving army trucks.

The worst part of their offense, short of killing and maiming people, is the deafening noise of their motor horns. These, for the most part, are vicious affairs attached to the exhausts, screeching when the button is pressed, with every throb of the engine, and with a degree of noise in proportion to the horsepower. For some strange reason this character of warning has been made a feature of motor truck construction, as though the heavier the truck the louder must need be the noise. A small truck can kill or maim just as efficiently as a large one, and so can a passenger car for that matter.

The horns on these cars are bad enough and are quite as capable of warning possible victims as the ear-splitting contrivances of the trucks. It is within the power of the city authorities to abate this nuisance by forcing truck owners to provide milder methods of warning. These exhaust horns should be abolished, for trucks are not permitted to travel at so great a speed that they need to be heard blocks away.

DETAIL OF A HOUSE, WASHINGTON SQUARE NORTH, NEW YORK

THE AMERICAN ARCHITECT Series of Early American Architecture

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EDITORIAL

Mortgage Tax Exemptions as an Impetus to House Building

THE City Club of New York, in a memorandum on the housing crisis, prepared for the special session of the New York legislature, very thoroughly analyzes the factors that have created the present grave condition and discusses forcefully the remedies that are proposed to ameliorate it.

We learn that ever since 1916 the demand for dwellings in New York City has greatly exceeded the supply. The situation is growing steadily worse. The number of tenement or apartment houses built in the city in 1914 and since was as follows:

Year	No. of tenement houses	No. of apartments
1914	1,242	20,577
1915	1,368	32,617
1916	1,207	21,359
1917	760	14,241
1918	130	2,706
1919	89	1,481

Year by year, continues the memorandum, the city has been growing and the demand for dwellings becoming more urgent. This is indicated by the steadily diminishing percentage of vacancies. A certain number of vacant apartments is essential for a number of reasons, such as to permit the inevitable movement of population, the making of repairs, and the discarding of worn out tenements no longer fit for occupancy. A margin of vacancies is absolutely necessary in order to afford that possibility of change without which the landlord has the tenant absolutely in his power.

Any relief that would lessen the gravity of the present situation is nowhere in sight.

AFTER reviewing the more important of the many schemes that have been brought to the attention of the State Commission on Housing, the City Club regards as most important the suggestion of a proposed tax exemption. Weakness of the mortgage market is one, if not the leading factor now operating to check the building of houses by private enterprise. The exemption of mortgages from the income tax laws would have a tendency toward easing the present situation, but the difficulties would be considerable. Continuing, the report states:

The state income tax rates are so low that without a corresponding Federal amendment State exemption would mean little. But official legal opinion is to the effect that statutory provision for a State exemption cannot be directly dependent in its operation upon the enactment of a similar amendment to the Federal law. Those in touch with the situation at Washington, on the other hand, assert that the only hope of securing a Federal exemption is through initial action by the New York Legislature.

A much worse difficulty is the insistence by advocates of the measure that it must affect mortgages on new and existing buildings alike and must apply to commercial and industrial mortgages as well as to loans on individual and multi-family houses. This point of view is to regard the general mortgage market as a whole and to give it a measure of general relief in the hope of an incidental benefit to new housing projects.

Obviously the plan would involve the cutting off of a large source of national revenue, which would have to be made up elsewhere.

Holders of existing bonds secured by mortgages on public utilities and on commercial and industrial plants would be given a substantial appreciation in the value of their securities.

The volume of tax revenue waived from mortgage interest on new single and multiple houses—the end really aimed at—would be comparatively small. The revenue waived from mortgage interest on buildings erected at pre-war prices, and therefore already favorably situated, would be immensely greater.

The current argument is that any discrimination as to use or period of construction would result in extensive calling of existing mortgages. There may be some force in this point. Existing mortgages are already being called for the purpose of reinvesting the proceeds in securities of an entirely different character. This process would be greatly accelerated by any statute which should exempt all future mort-

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gages from income taxes. It might even be somewhat accelerated by an exemption applying only to mortgages on new dwellings. The degree of such influence would be dependent largly upon the extent of new house building operations.

To the foregoing the City Club's committee adds that the club is not prepared to give support.

EXEMPTION of taxes on new dwellings is regarded as more direct and much more patent in its effects. Such a plan would not cut off any public revenues from the land on which new buildings stand, but would only waive for a limited period the tax on the value of the new house or tenement erected.

By this plan the present excessive cost of home building could be measurably overcome. Present builders would be put more nearly on a basis of equity with those who built at pre-war costs. The new building would have an actually increased market value and more mortgage money could be safely loaned upon it. The relief would go exactly where it is socially needed, for every student of the problem agrees that there can be no genuine relief without the resumption of house building.

The proposed exemption would not differ greatly in principle from the existing exemption of shipbuilding from the operation of the Federal excess profits tax. If the power to tax is the power to destroy, an emergency exemption may represent the power to keep alive. The sovereign power of taxation is so broad, and our State constitution so open, that there is little doubt this measure can be effected immediately by statute. As repeatedly interpreted by the United States Supreme Court, there is nothing in the fourteenth amendment to the Federal Constitution to interfere with any sane exercise of state discretion in choosing or classifying the subjects of local taxation.

When Europe Pays Her Debt to Us

WHAT will happen in this country when Europe settles down to payment of the debt she owes us? Today that debt amounts to some ten billions of dollars. There is not so much money and Europe must, therefore, pay in commodities.

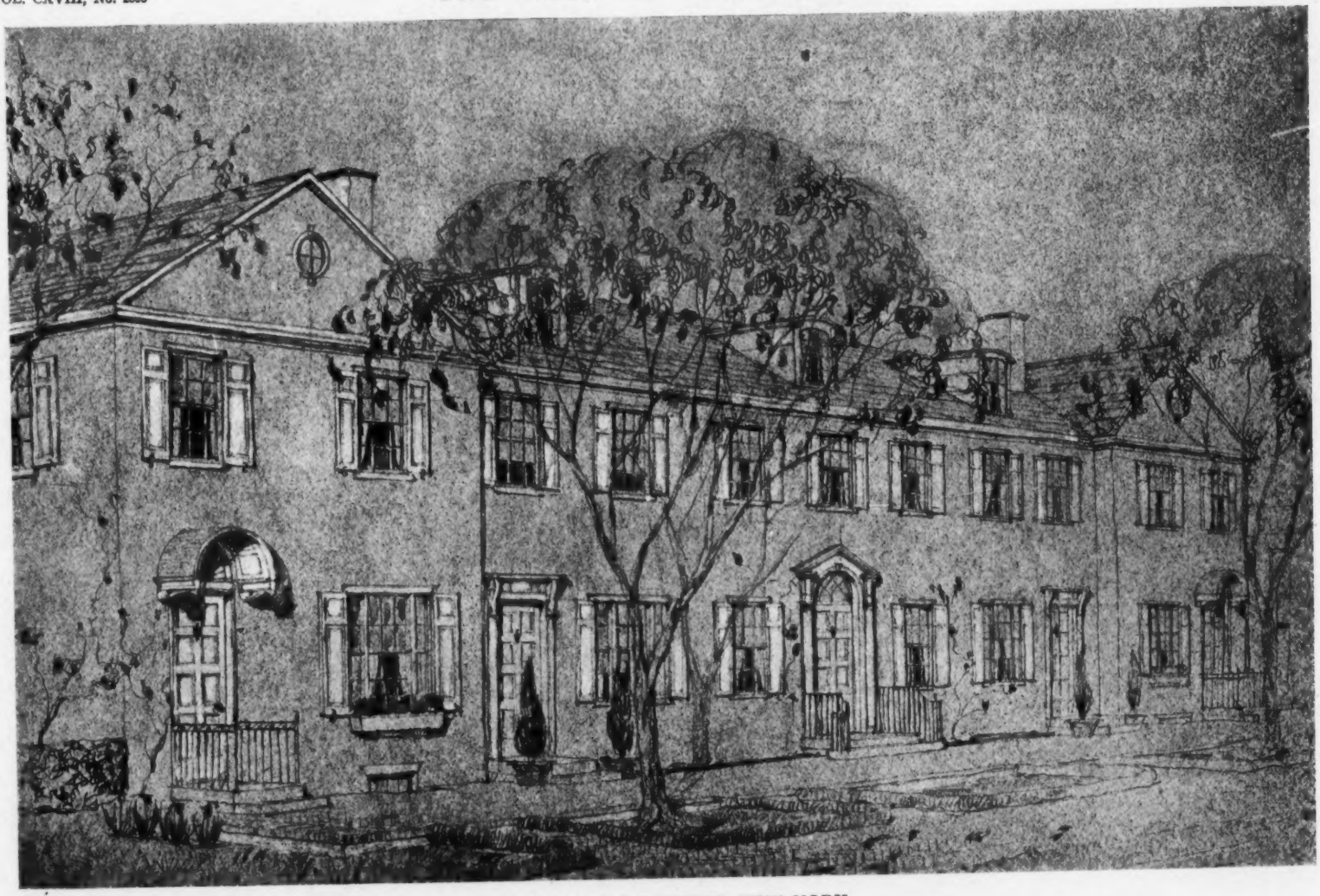
Just what, then, will be the effect of so vast a stream of commodities, cheap in price, when they are rushed to our markets? Undoubtedly it will mean a precarious situation to manufacturers of competing commodities in this country. It will not be wise to ignore this danger for the reason that this influx has not yet begun. Every wisely thinking man knows that eventually it will occur.

R. H. W. Ross, president of the National Marine League of the United States, in an address before the Engineering Society of Philadelphia, very ably discussed the probable effects of this large dumping of foreign goods in this market. He contends that there are three outstanding issues far more important than any others in the American political economy of today. These issues are vital to the professsion of architecture, as they are closely related to our economic welfare and would at the very outset affect building construction. We have learned the necessity for a closer consideration of these economic principles, and the fact that building is today in such a precarious state is largely due to a failure to sense the true relation of the many factors only now realized as dominating ones. The three issues referred to by Mr. Ross are:

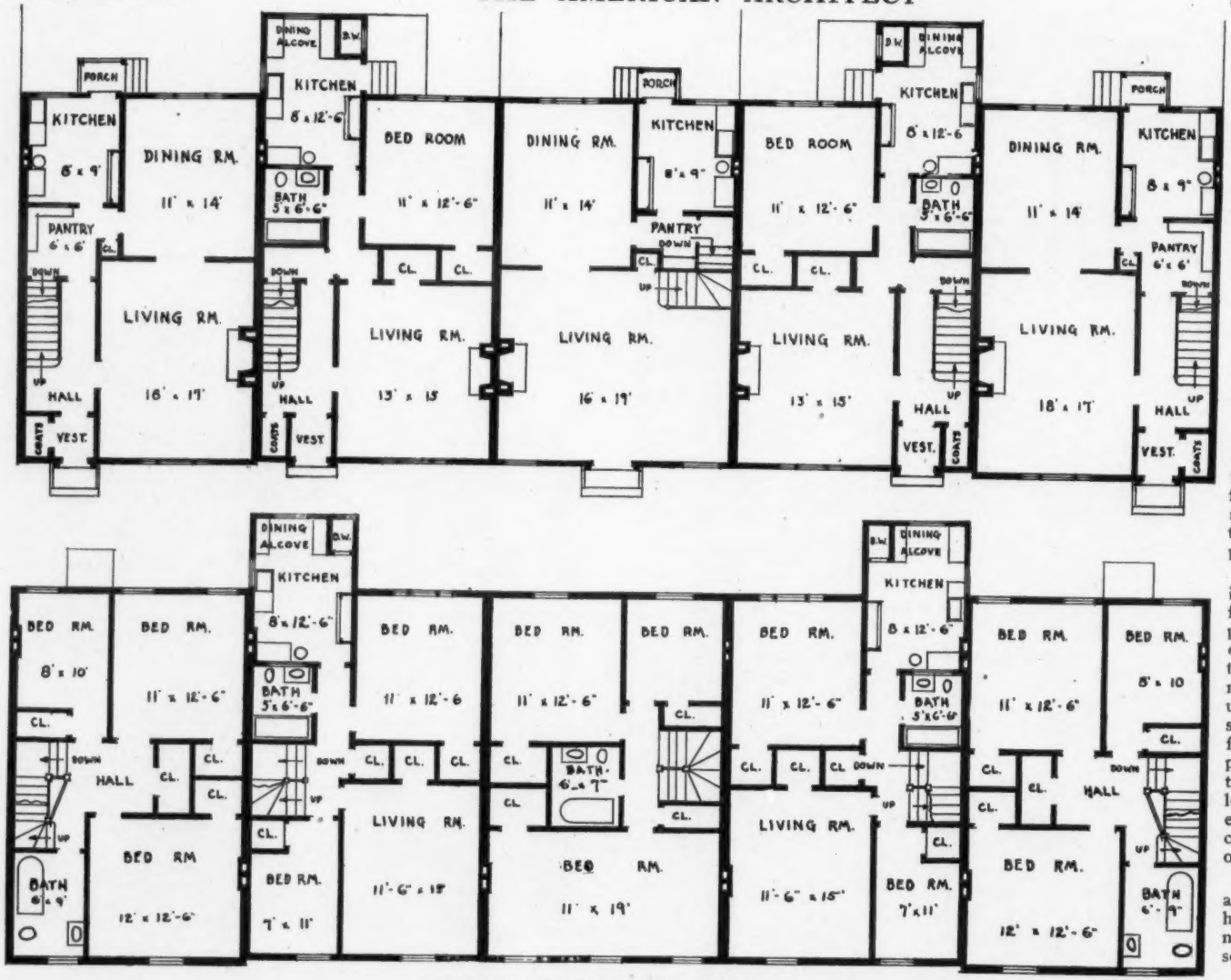
1. The necessity for the continued operation of American ships, in order that the transportation of American products to both new and old markets may be absolutely under our own control.

2. The establishment of free ports in the United States, so that most of the products of other countries that we shall have to accept in payment of foreign indebtedness to us "may be conveniently received, worked over, blended, repacked, relabeled, transshipped, re-exported, and finally marketed in other countries, all this being done without seriously disrupting the course of our own domestic trade as it now exists under policies that have prevailed for sixty years."

3. The entrance by America into some form of international league, "if for no other reason than to have ready and friendly access to our debtors and their affairs."



HOUSING AT KINGSTON, NEW YORK
CHARLES S. KEEFE, *ARCHITECT*



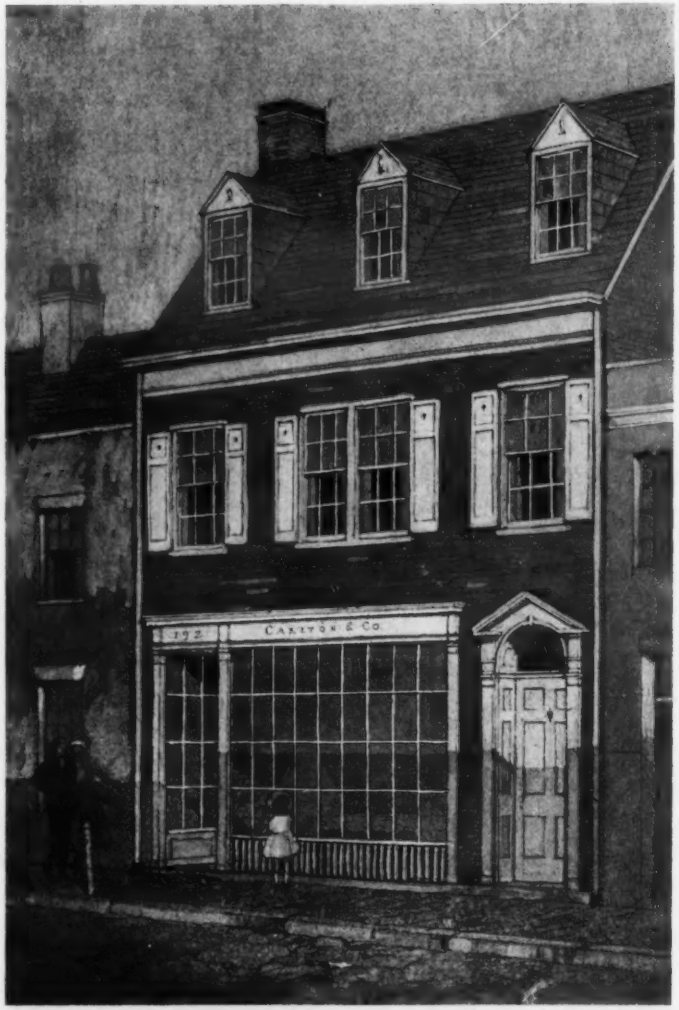
HOUSING AT KINGSTON, NEW YORK
CHARLES S. KEEFE, *ARCHITECT*

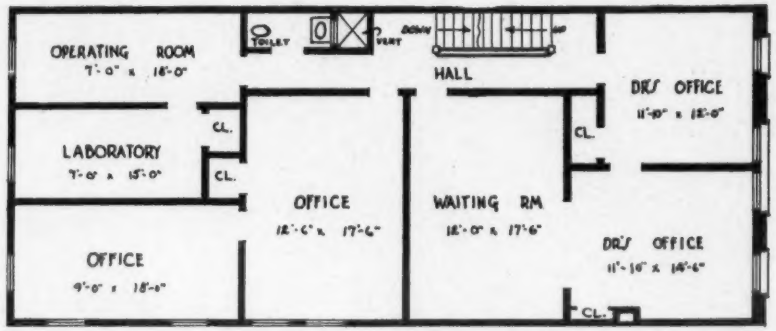
These buildings were designed to be sold in separate units. As shown on the plan Nos. 1, 3 and 5 are arranged for single families. Nos. 2 and 4 are arranged for two families. This last layout gives a small apartment on each floor.

The center house, No. 3, could in any case be arranged for a single family, but any of the others could be made for one or two families, as desired, by substituting the proper plan.

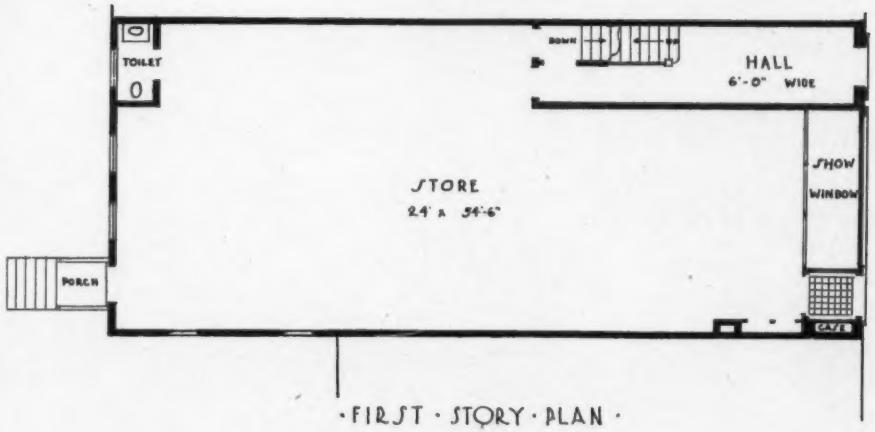
Where the plan is made for two families it is supposed that the owner will occupy the lower apartment, renting the upper one and supplying heat for both. The plan can be extended to any length desirable, each building occupying a width of 20 feet.

If built as an apartment house heat could be furnished from one source.





· SECOND · STORY · PLAN ·

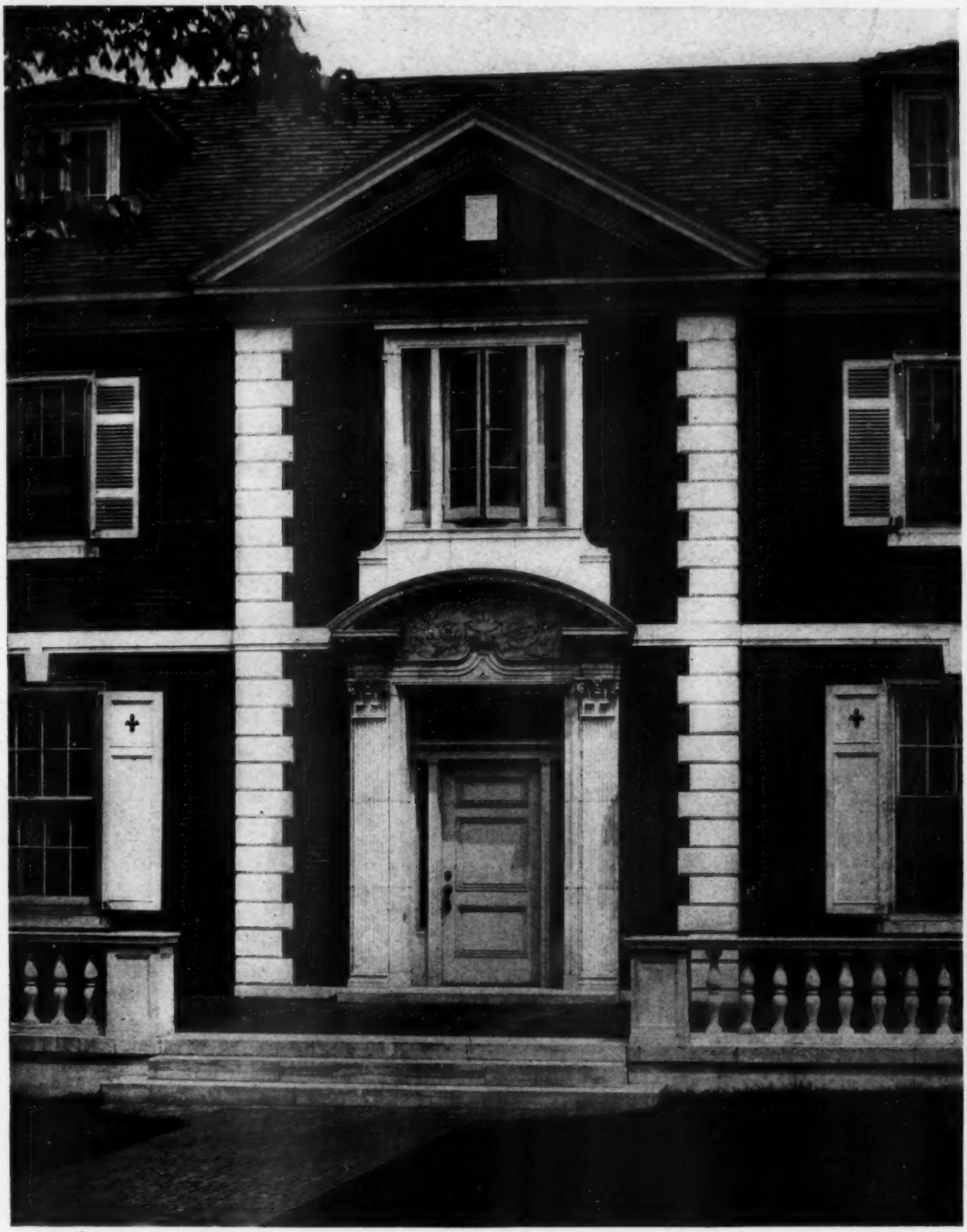


· FIRST · STORY · PLAN ·

STORE BUILDING, HUDSON, N. Y.
CHARLES S. KEEFE, *ARCHITECT*

HOUSE OF CHARLES L. DENISON, PASSAIC, N. J.
JOHN F. JACKSON, *ARCHITECT*

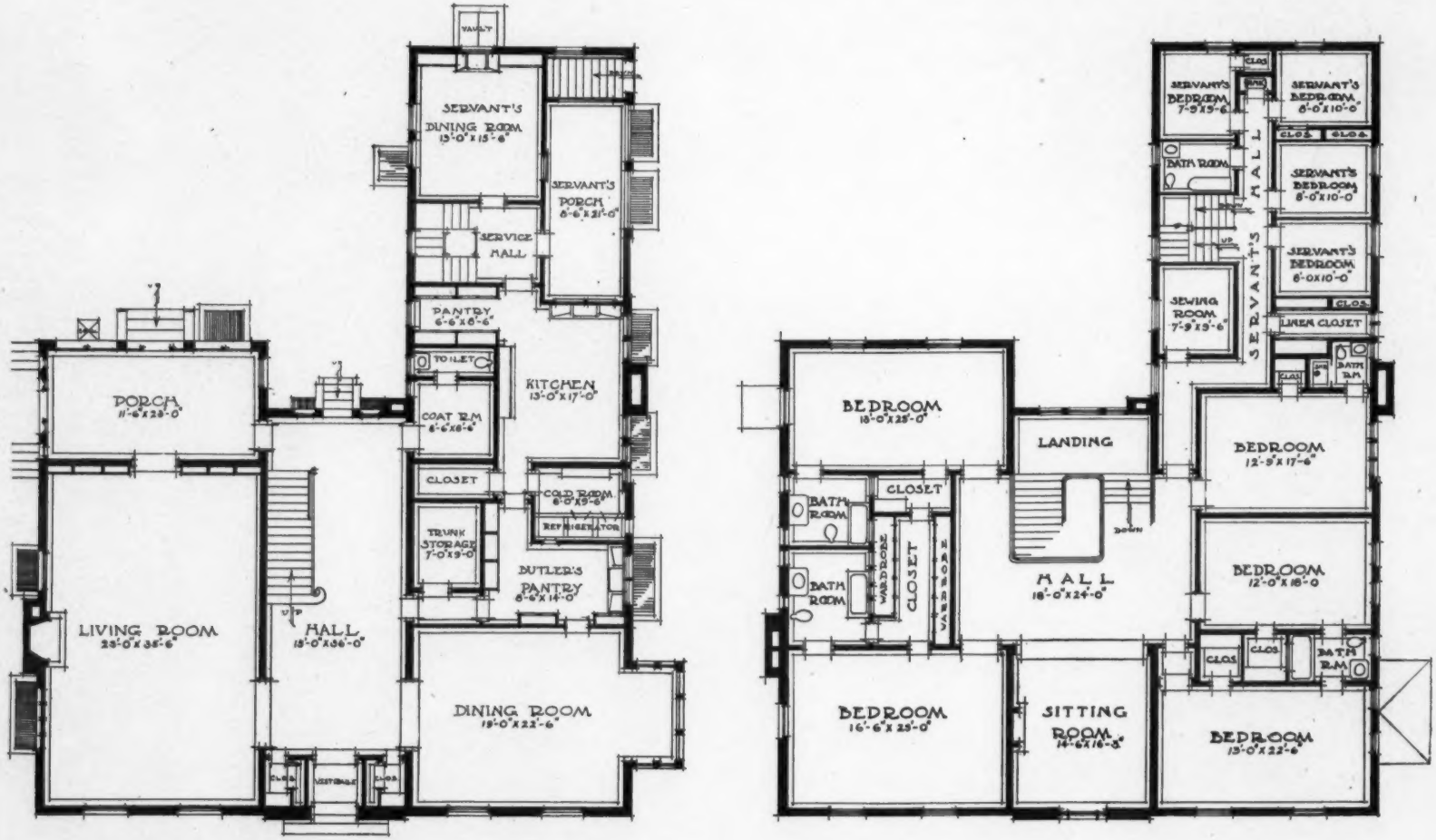
XUM



MAIN ENTRANCE DETAIL

HOUSE OF CHARLES L. DENISON, PASSAIC, N. J.

JOHN F. JACKSON, *ARCHITECT*



HOUSE OF CHARLES L. DENISON, PASSAIC, N. J.

JOHN F. JACKSON, *ARCHITECT*

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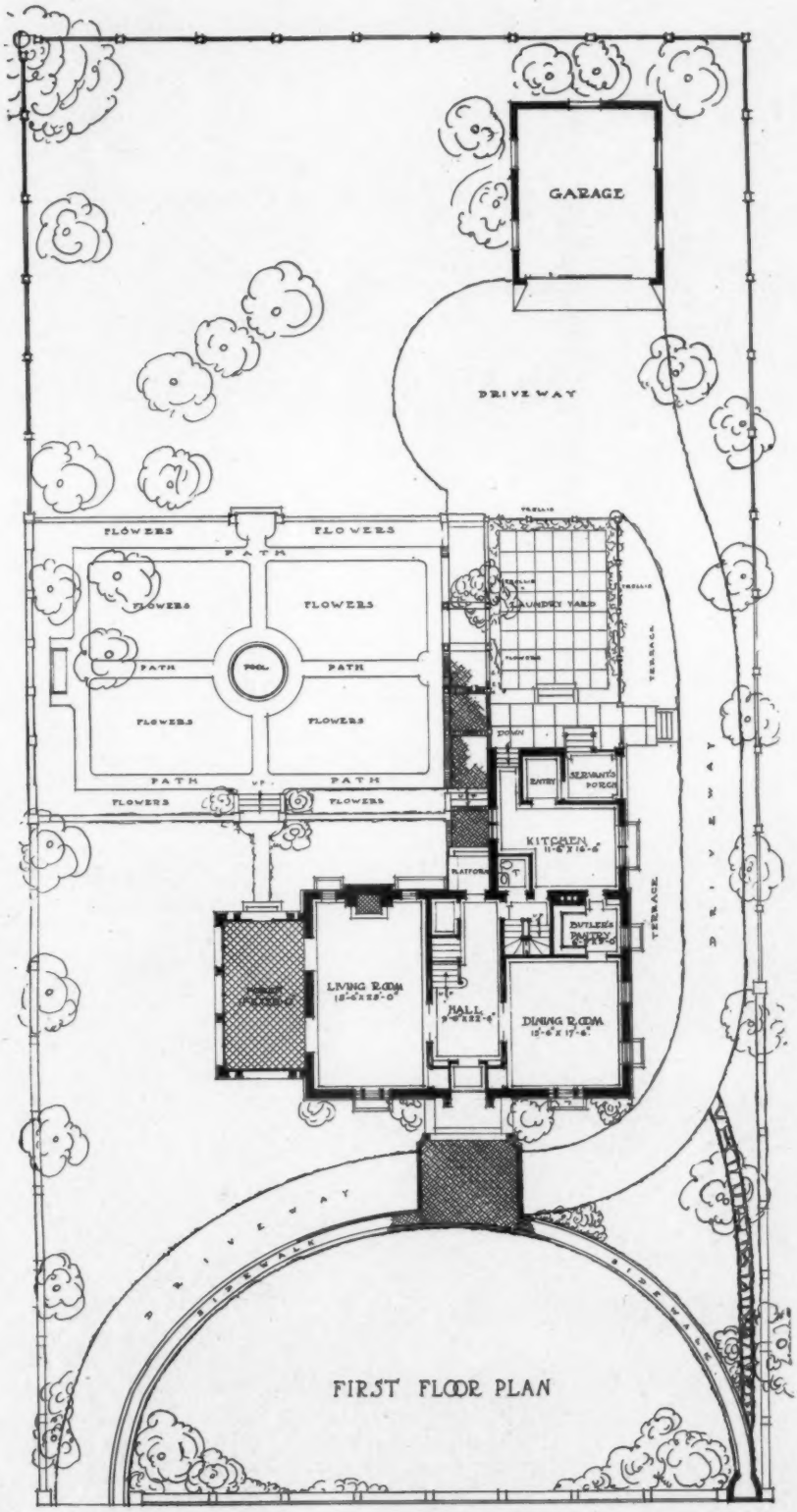
HOUSE OF JUDGE W. W. WATSON, PASSAIC, N. J.

JOHN F. JACKSON, *ARCHITECT*



HOUSE OF
JUDGE W. W. WATSON,
PASSAIC, N. J.

JOHN F. JACKON,
ARCHITECT

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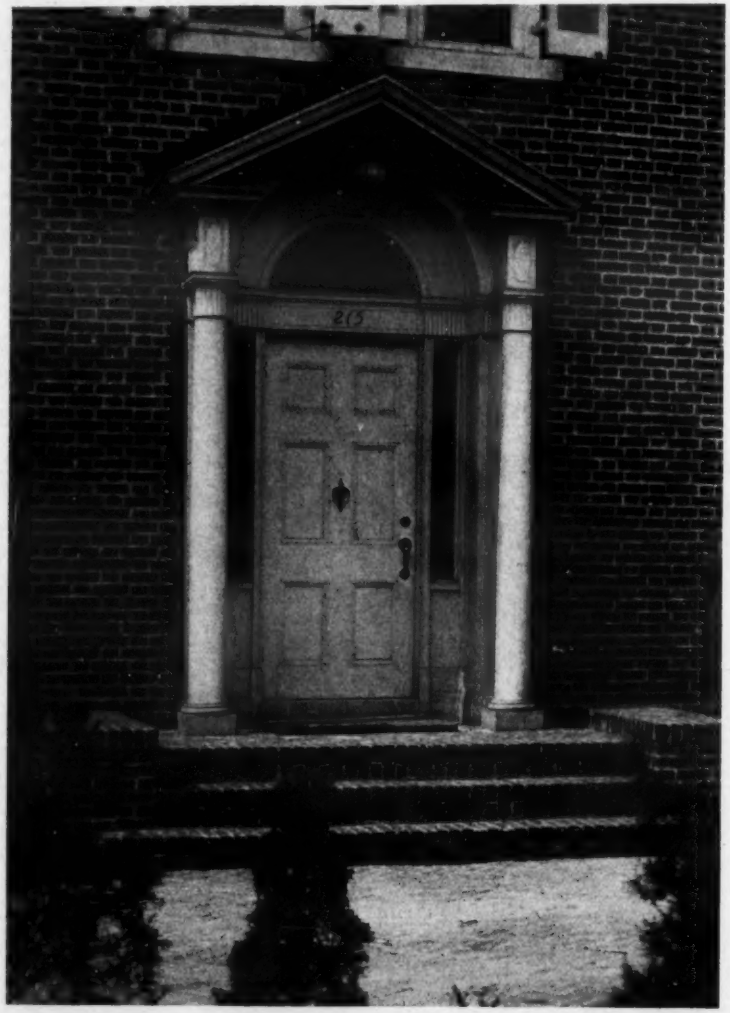
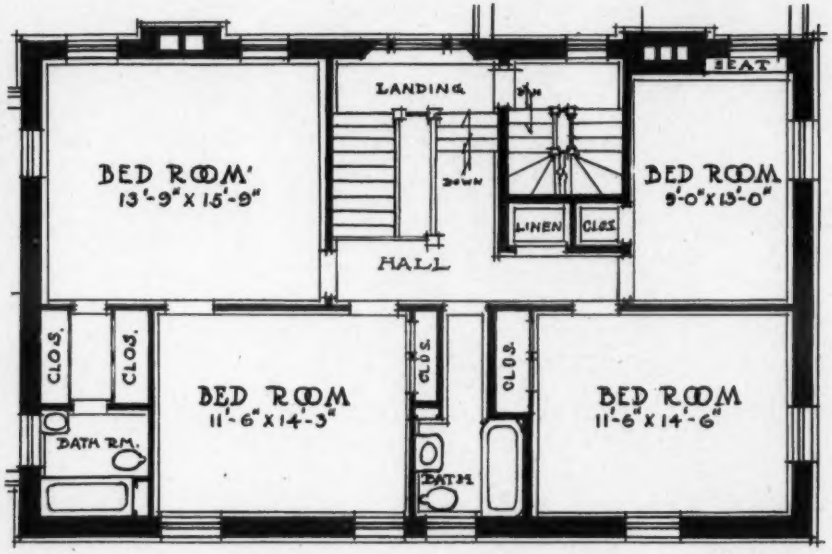
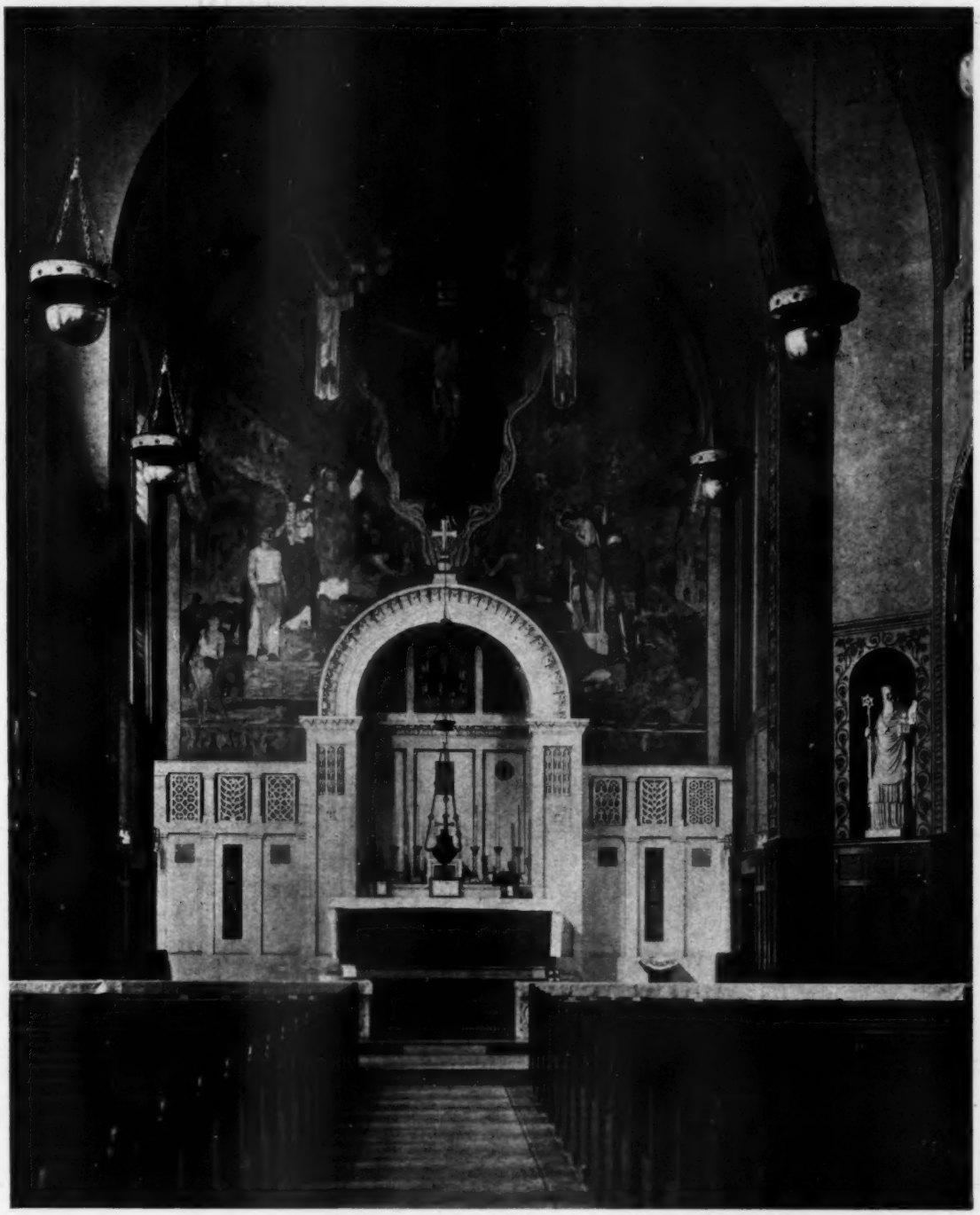




SECOND FLOOR PLAN

HOUSE OF JUDGE W. W. WATSON, PASSAIC, N. J.
JOHN F. JACKSON, *ARCHITECT*



THE SANCTUARY

ST. COLUMBA'S CHURCH, JOHNSTOWN, PA.

JOHN T. COMES, *ARCHITECT*

The Altar and Screen are executed in lime, as are also the Statues on either side of the Sanctuary
The mural painting and the decorations on the Tympanum are by F. B. Lieftuchter

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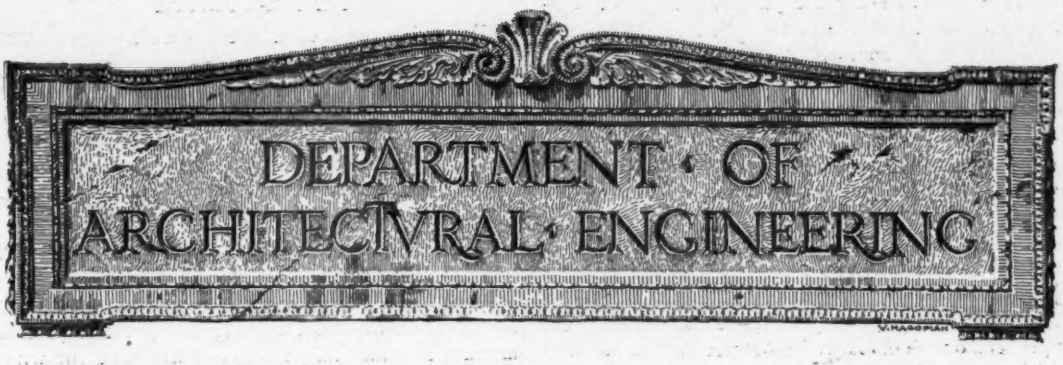

Safeguarding the Water Supply for the Isolated Country House

Some Important Notes on Its Selection and Installation

By WILLIAM C. TUCKER, *Sanitary Engineer.*

THE introduction of a water supply system for the isolated country house, which shall be permanently safe, of reliable quantity, and of low cost, is a problem which demands scientific and business acumen.

SURVEY OF PROPERTY:

The owner of a country estate should not enter upon the development of his property, be it small or large, in an impulsive or haphazard manner but with careful forethought. To accomplish this and to aid him in his study, a topographical map should be accurately prepared.

Immediately upon obtaining possession of the property, a casual examination should be made for a permanent water supply, during which it is well to note carefully the location of that on the neighboring land, and the method of pumping. This will eliminate much perplexity and save the loss of valuable time, leaving the more promising features for a thorough and scientific investigation. Every possible source must be marked for observation,—springs, brooks, water shed, seepy ground, and points of vantage for the location of an artesian or driven well, should all else fail.

SOURCE OF WATER SUPPLY:

A careful examination of the environment of the source of a proposed water system should always be made. The slope of the ground, the drainage area, the character of tillage of adjoining land, with the thought in mind of the possibility of direct or indirect contamination. The writer has in mind a flowing well in a section of New Jersey, given to the beautiful homes of New York men of means, which upon analysis by the State Board of Health gave indications of insecurity, never satisfactorily explained. It was discovered that excessive amounts of fertilizer had been applied to the poor land of an estate three miles distant, under control of a wealthy and impatient owner who wished to produce glowing results over night; but whether this suspicion was tenable or not is problematical.

The permanent source of the water supply with its tributaries must, if possible, lie wholly within the confines of the property, to insure absolute control and freedom from contamination. Its rate of delivery must be accurately known from a series of careful intermittent gaugings, taken at different periods, some of which must be in the fall of the year, when the flow is at its lowest. It must be at a safe distance from the house, barn, and farm activities, and other points from which there may be fear of the slightest possible future contamination, but with which it must coordinate as closely as possible. This demand is often most perplexing, and may lead to an undesirable solution.

EXAMINATION OF THE WATER.

WHEN the permanent source of supply has been selected, after careful investigation, a sample should then be sent to the State Board of Health for a chemical and biological examination, with accompanying reports. This examination is free of all charge, except that for the container, to and from the laboratory. A number of examinations, within reason, will be cheerfully made. The report will clearly indicate the chemical constituents which the sample may contain and their percentage. The biological

examination will show the pathological germs discovered if any, and the count. Such a report also contains a most comprehensive and concise statement of the deductions as indicated in the analysis, which is most valuable, is always conservative, and must be conscientiously followed, often necessitating the abandonment of a beautiful and what may appear healthy source of water supply, and the renewal of investigation for a substitute source. The enthusiastic owner is so often deceived by the appearance of the limpid and sparkling water from a running spring; and analysis should be made once a year or at such time as there may be cause for the slightest apprehension. This is well illustrated by an incident which occurred to the writer in the course of his professional duties. The young members of a family and their mother, living in a beautiful home in the country, surrounded with every luxury and comfort, from some cause became listless and lacking in animation; their food was wholesome, the air invigorating, and they had ample rest and recreation. The writer made diligent investigation and suggested that an analysis of the potable water be obtained. This was ridiculed as being unnecessary, as "the spring has been running ever since grandfather was a boy." The water was analyzed and the report came back indicating contamination, which was then easily traced. Another incident most similar occurred in connection with a well on the property of a large, fashionable and most exclusive young ladies' school on the Hudson River not far from New York. This well was most popular and had been in use many years, and "I drank from this well when I was a boy," said the old gardener, who was well over sixty. This water, too, was analyzed with similar results. Thus time may change conditions.

There is an erroneous impression along the country side, particularly amongst those of untutored mind, and tenacity of opinion, that any impurity contained in flowing water will in time be removed. This is true of any impurity held in suspension which can be removed by sedimentation in quiescence, but this does not hold, should the impurity be of a pathological nature. It is possible, of course, to remove pathological impregnation, but the method is most delicate, of the highest scientific attainment, requires unceasing scrutiny, and is most costly. Boiling will absolutely purge the most contaminated of waters; this has often been demonstrated by intrepid explorers in tropical climates. It may be accepted as an axiom, that should the water under consideration show any evidence of contamination, that source must be abandoned, and search continued for a pure, wholesome, healthy supply. It is doubtful if most persons fully realize the importance of pure water.

An Ideal Source.

THE ideal source is the isolated, never failing, cool and refreshing bubbling spring. Such a source is to be highly treasured. It must be thoroughly explored, its tributaries traced and its complete history learned. The intermingled earth should be removed, and the spring surrounded with a watertight masonry wall to exclude ground water, which must be extended well above surrounding surface with curb to provide against surface drainage. Bottom of spring must be left absolutely free. It is most essential in this connection that all the branches be gathered together, so that the greatest possible amount of water may always be available for which there will always be found use. Excess supply may be used in the creamery or a swimming pool. The spring must be provided with suitable housing for protection against the intrusion of superficial material and to insure its exclusive use for potable purposes.

Other Sources.

The use of the brook meandering through the property with its foreign source, it not to be received with unalloyed complacency. That portion within the boundary is, of course, under control as to safety and conservation, but that beyond is not. There is always the fear of pollution and interference with its entire delivery.

The development of seepy ground as a source of water supply is not to be encouraged. There is always the fear of unreliability of purity and quantity.

The reversion to the artesian or driven wells as a source of permanent supply is only to be entertained, to the writer's mind, as a last resource, when all other methods are found wanting; the initial cost is never definitely known until water of desired quality and quantity has been obtained; the permanency of rate of delivery is not certain; the quality is generally hard and not as beneficial as that from the spring, and it is generally unpopular for use in the laundry.

Reserve Supply.

PUMPING directly from the water source is inefficient, and lacking in engineering ability; a reservoir or reserve supply should always be maintained. The rate of flow of the spring may not be great, but it probably is constant, and the total yield per day will usually be found sufficient to meet all demands. The reservoir may be located at any point which may be found appropriate, in relative proximity to the farm activities and well below the spring so that the overflow may be quickly delivered, thus obviating freezing. It should be well constructed of masonry, carefully laid in Portland cement with brush smooth inner surface, and of strength to with-

stand the earth pressure from without when empty and the water pressure from within. The wall should extend well above ground with curbing. The reservoir should be so located that it may be drained for cleaning and repairs, the drain should be at centre of bottom, from the four walls so that in making repairs should leak occur, only small section of flooring would be flooded.

It will be found advisable to provide a small silt or grit chamber, with removable wire screen, at end of basin of which it forms an integral part, to intercept the grit, sand any foreign material which the overflow might bring into the basin. The reservoir should be of ample capacity to carry a week's supply, should the purse allow, so that emergency of drought or other causes may be readily met. The dimensions which will meet the demands for the average country property cannot be accurately determined, but a basin 12 ft. x 8 ft. with 4 ft. 6 in. depth of water, or 3,250 gals. capacity, will not be found excessive of cost. It will cost less to provide area than depth and the length can easily be extended should this be found necessary. The reservoir should be carefully housed and protected in similar manner and for the same cause, as the spring, and should be extended so as to provide shelter for pumping equipment.

PRESSURE SYSTEM:

Any point demanding water service which may be situated below the level of the reservoir may be supplied by gravity flow, but in many instances this will not be found possible, in which case an elevated tank, or the pneumatic pressure system will have to be employed. The latter consists of a cylindrical steel tank automatically kept filled and under pressure by a small pump and motor on the same bedplate, controlled by pressure in the tank.

ELEVATED TANK

The elevated tank will require pumping equipment which may vary according to the duty demanded, and cost available.

WINDMILL:

The use of the windmill will be found most economical but most unreliable, and for this reason the common form of pumping equipment will be found much more satisfactory.

HYDRAULIC RAM:

The hydraulic ram has given excellent service; it requires little or no attention, is self contained and of little or no operating expense. It should be housed for protection and safety. This form of pumping, however, can only be employed where there may be an abundance of water, as under ordinary circumstances, only one tenth of the water passing through the ram can be raised to a height ten times that of the fall from the source.

The successful solution of the problem of providing a wholesome and copious water supply system for the country estate, and one which will be found efficient, and may be operated at low cost, will be found to depend upon a close study of existing conditions upon the property, and the most economical means of producing results which shall meet all demands.

Results of Corrosion Tests Conducted by the National Lime Association

THE final report on the corrosion tests conducted by the National Lime Association has been issued, and from this it would appear that the addition of from five to fifteen per cent. of hydrated lime to a gypsum mix will greatly retard corrosion of imbedded steel. The extent of the tests, i. e., three months, and the number of specimens tested does not seem sufficient to prove beyond doubt, the theory that the National Lime Association seeks to establish, and it would appear that this might be a fertile field for such an organization as the Bureau of Standards to investigate more fully. The report follows:

A series of ten slabs of each of 14 different materials were made up, each slab having embedded in it two polished steel rods and each series being divided into two sub-series of 4 slabs each. One sub-series was stored in air only, while the slabs of the duplicate sub-series were immersed in water for five-minute periods once a week during the conduct of the test. Slabs from each sub-series were broken and the extent to which corrosion of the steel rods had proceeded was noted at the following periods: one week, two weeks, one month, two months, and three months.

None of the concrete or lime mixtures showed any corrosion in either the air or water-treated slabs, but in series 7 to 10 inclusive, consisting of gypsum and hydrated lime—ranging from 100 per cent. gypsum to 85 per cent. gypsum and 15 per cent. hydrated lime—some interesting results were obtained.

One hundred per cent. gypsum, air-cured, showed a visible corrosion at the end of one week, which apparently reached a maximum in about one month due to the protective coating of iron oxide formed.

One hundred per cent. gypsum, water-dipped, showed a greater corrosion than the air-cured slab, and this kept increasing throughout the time of the experiment.

Ninety-five per cent. gypsum and 5 per cent. hydrated lime, air-cured, showed no corrosion at the end of three months, while the water-dipped slab showed noticeable corrosion at the end of two months and visibly increased corrosion at the end of three months.

Ninety per cent. gypsum and 10 per cent. hydrated lime, air-cured, showed no corrosion, and the water-dipped sample showed none at the end of two months, but very evident corrosion in three months.

Eighty-five per cent. gypsum and 15 per cent. hydrated lime showed no corrosion in either the air-cured or water-dipped slabs at the expiration of the three-months' test.

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Foundation, Their Selection, Design and Construction

Part III

AS pointed out in previous articles, it is necessary before an intelligent study of a foundation problem can be made, to determine two governing factors, i. e., the load to be supported, and the nature of the sub-soil. The former is determined entirely by the size, type of construction and character of proposed occupancy of the building, while the latter can only be judged from a preliminary investigation sub-soil conditions.

The weight to be supported may vary from less

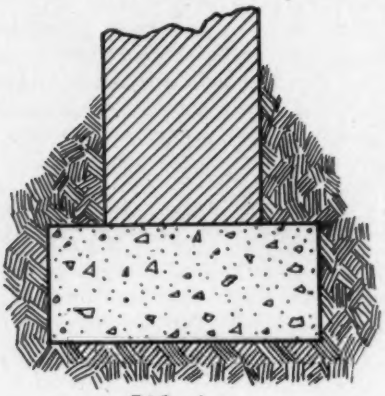


FIG. 1.

than a ton per running foot of wall for a small structure to over 1,000 tons per column for a skyscraper, while the soil may vary from a soft wet clay with a bearing capacity of only one-half ton per square foot to good hard rock capable of supporting a safe load of forty tons per square foot. For the majority of commercial structures the values of these factors will lie well within the extremes stated.

It is the purpose of this and succeeding articles to describe the various conditions under which different types of foundations are suitable, commencing with simple illustrations and working up later on to more intricate problems.

The Spread Footing.

The most common, as well as the simplest type of foundation is known as the "spread footing." In this type the footing is placed just below the basement level, or if there is no basement then below the frost line, and constructed with a spread sufficient to cover a ground area capable of resisting the imposed load. Spread footings are used in all classes of construction. Perhaps its simplest application is under a wall where an equal projection of footing on each side is possible, as shown in Fig. 1. Its most extended use is when developed into a continuous mat of reinforced concrete covering the entire ground area of the lot, with both walls and columns resting thereon. Where the soil is capable of supporting in excess of two and one-half tons per square foot its use will usually prove economical, except where very heavy concentrated loads occur. Even for bearing values under this figure it can be used to advantage in buildings of moderate size. Let us take as an example a twelve-story office building with columns spaced 20 feet each way. The total load on each column footing would be in the neighborhood of 400 tons, which for a four-ton soil would require a spread of 100 sq. ft. A footing 10 ft. square would therefore be adequate. By using a reinforced concrete mat of this area, a comparatively shallow footing could be designed, thus keeping the

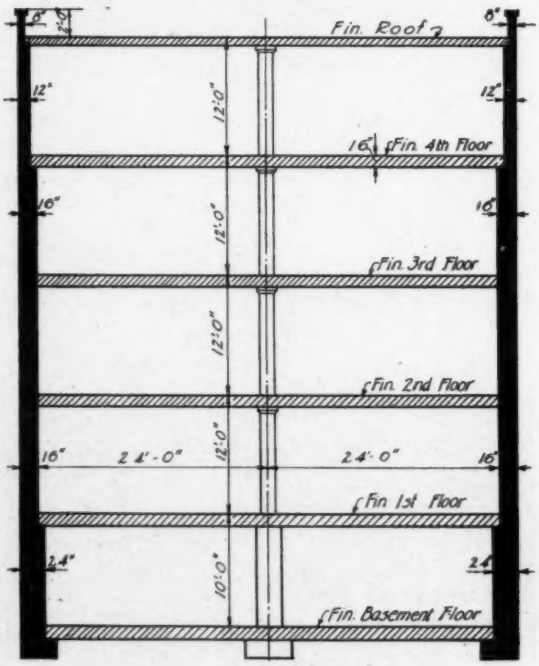


FIG. 2. CROSS SECTION

excavation to a minimum. Were a medium rock encountered, capable of carrying 20 tons per square foot, all that would be necessary would be to excavate pockets 5 ft. square at the column locations and about 2 ft. below the basement floor, level the rock, and use C. I. bases 4 ft. 6 ins. square, grouted in place.

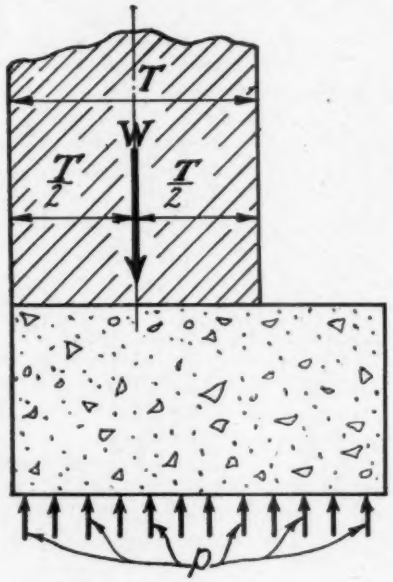


FIG. 3.

THE ECCENTRIC WALL FOOTING.

For buildings of moderate height, where bearing walls are used, the design of the wall footings for walls located on a lot line often requires careful study. In such locations it is necessary to use eccentric footings, that is with a spread of one side only. A common practice is to make the footing anywhere from 6 ins. to 2 ft. wider than the basement wall, and assume that all the requirements for a safe footing have been complied with. If settlement occurs, it is easy to place the responsibility on the builder, rather than acknowledge a faulty design.

Consideration will be given to a problem involving this type of spread footing.

Let us assume a 4-story factory with bearing walls and wood floor joists having a clear span of 24 ft. Assume that the live load is 120 pounds and the dead load 20 pounds per sq. ft. For the roof a live load of 40 pounds and dead load of 15 pounds per sq. ft. will be assumed. The wall thickness and story heights are taken as indicated on the sketch. (See Fig. 2.) The total load coming on the soil at the footing level will be 9.1 tons per linear foot of wall computed as follows:

Floor and Roof Load	Width		Length			Load per sq. ft.		Total Load
Roof	1	×	12	×		(40	+ 15)	= 660 lbs.
Floors	4	×	1	×	12 ×	(120	+ 20)	= 6,720 lbs.

Wall Load	Thickness		Length		Height		Wt. per cu. ft.		
Parapet	2/3	×	1	×	2	×	120	=	160 lbs.
Fourth story	1	×	1	×	12	×	120	=	1,440 lbs.
Three lower stories	1.33	×	1	×	36	×	120	=	5,760 lbs.
Basement	2	×	1	×	10	×	150	=	3,000 lbs.
									17,740
Assume weight of footings									460
Total load on soil									18,200

Or 9.1 tons per linear foot of wall.

For a wall two feet thick, the maximum footing projection permitted by good practice for an eccentric footing is one foot. It might here be well to correct an erroneous impression as to the effectiveness in distributing load produced by extending the footing projection on one side only.

Let W, Fig 3, be the total load of the wall, floor, etc., which for analysis may be assumed to act through the center of gravity of the wall section. To determine the actual center of gravity for the problem under consideration would be a lengthy calculation, but an inspection would indicate that it is near the center of the basement wall, and it will be so assumed. This force must be resisted by the upward pressure of the soil, and this pressure per unit area will be designated as p. Now if the footing were extended a considerable distance, and it were possible to obtain a distribution of load over the entire spread, it will be seen that this upward pressure would cause an unbalanced overturning moment on

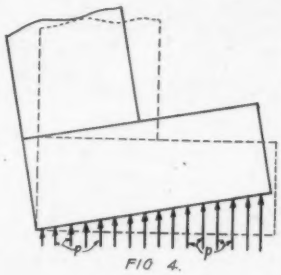


FIG 4.

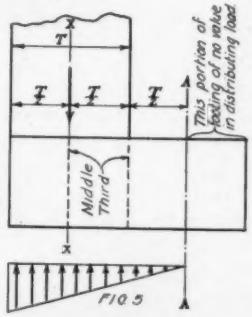


FIG 5

the wall producing rotation, as shown in Fig. 4. This condition, however, is not possible, and what actually occurs is a decrease in the intensity of pressure until zero is reached, as shown in Fig. 5. It will thus be seen that any projection placed beyond the line A-A is worthless and a waste of material; further than that, it is positively detrimental since it tends to produce rotation when settlement occurs. When the center of gravity of the load comes at the center

of the wall the maximum projection can only be equal to one-half the width of the wall. Under these conditions the line of resultant pressure XX does not fall outside the middle third of the footing. Whenever this resultant force falls without the middle third, tension occurs at the extension of the footing.

Thus for the problem under consideration the maximum projection will be ½ of 2 feet or 12 inches and the total width of footing will be 3 feet. Since the load to be carried is 9.1 tons per linear foot, the *average* load on the soil will be $9.1 \div 3 = 3.03$ tons per sq. foot. From Fig. 5 it will be noted that this intensity of pressure is not uniformly distributed over the soil under these conditions, although if the soil is considered as capable of supporting a uniform load in excess of 3 tons per sq. foot this foundation can be considered as safe to use.

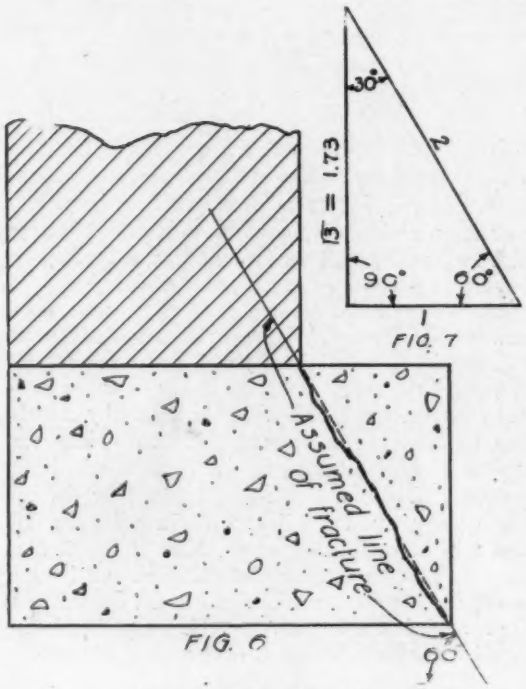


FIG. 6

FIG. 7

Unless reinforcing steel is used, the thickness of the footing is determined by the rule that the line of fracture of the material will make an angle of approximately 60° with the horizontal, as shown in Fig. 6. The sides of a 30° and 60° right triangle are in the ratio of $1 : \sqrt{3} : 2$ as shown in Fig. 7. It will be noted that the vertical leg is 1.73 times the horizontal one. Since the former represents the thickness and the latter the projection, the thickness should be made approximately 1¾ times the projection. For this problem as the offset is 12 inches the thickness should be 1¾ x 12 or 21 inches. For economy the footing should be stepped up as shown in Fig. 8.

In case the soil were of such nature as to be unable to support a loading of over three tons per square foot, it would then be necessary to either excavate to a firmer strata or drive piles. If ground water were encountered at the footing level, wood piles should, under most conditions, prove the most economical, otherwise the choice would lie between concrete piles and deeper excavation, unless it were possible to offset the wall so as to make the construction of a concentric footing possible. It is usually the case that the value of the lost floor space due to offsetting the wall is greater than the increased cost of pile or other footings.

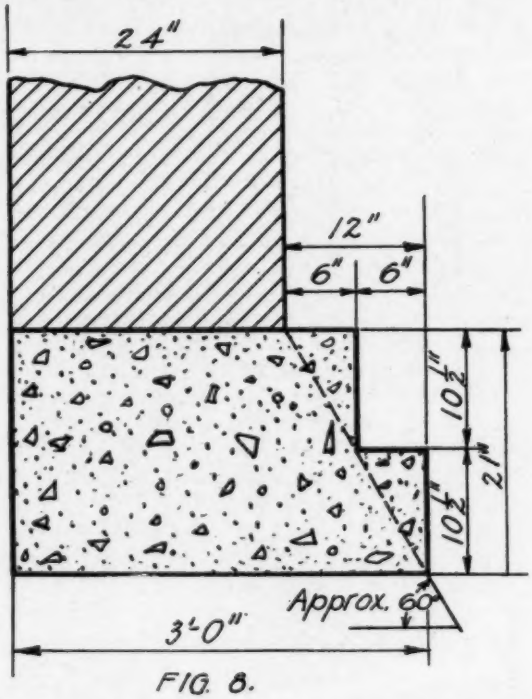


FIG. 8.

Jack Pine

Under the above title, the United States Department of Agriculture has issued Bulletin 820, prepared by William Dent Sterrett, Forest Examiner. This bulletin goes thoroughly into the subject of this tree, describing its distinguishing characteristics, range, geology, the various uses to which it can be applied to advantage, etc., and is replete with illustrations and tables. Copies may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., at twenty-five cents per copy.

An Efficient Arrangement of Schoolhouse Entrance Doors

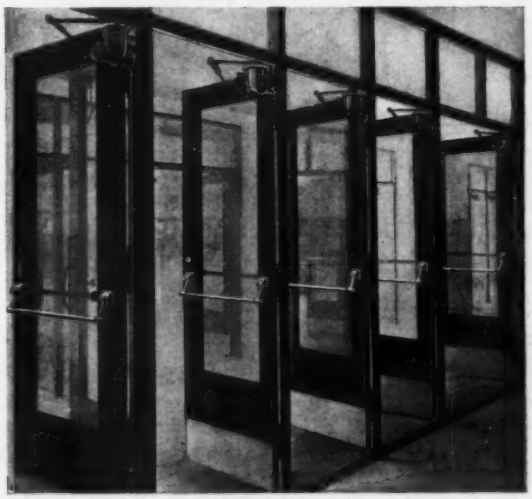
METROPOLITAN railroad stations have very generally adopted a type of entrance which experience has shown to be well suited to the varying conditions of traffic. The ingress and egress requirements in such buildings are hardly more severe than those which obtain in the large city school buildings, through the doors of which a large number of persons have to pass in a very short space of time. These doors must also afford ready passage to solitary individuals, be designed to present a barrier to draughts and should be equipped with fixtures which while permitting egress at all times may be locked against incomers at specified periods. The type of entrance now in general use in schools, with double doors opening out, alone or with single doors at the side, might, it would seem. be replaced to advantage by the row of single doors which the railroad stations employ and which are shown in the accompanying illustration. In the design of new schools it would seem well to adopt this arrangement.

This type presents a number of advantages. In the first place, where there are double doors, one of them is inactive except upon special occasions and is fastened against entrance, but the presence of the usual knob or handle on the outside frequently leads the incomer to endeavor to use the locked door, particularly since it is the one nearest his right hand. This is especially true of children who have no knowledge of structural details and with habits not yet fixed by usage.

Again, with the idle leaf fastened, the space available for passage is only that of the single door both for exit and entrance, causing inconvenience to persons who meet at the door. With exit fixtures such as panic bolts, the idle leaf can be opened from the inside, but the person seeking to pass out through it passes to the left, where incomers will be encountered. If both doors open at will, swing to a common center in closing, there is liability of people being struck by the closing doors. With single doors, all hung alike, passers in either direction instinctively keep to the right, finding ready passage without interruption and with only the amount of opening required by the occasion. Individuals passing in are not disturbed by files of pupils passing out. Several doors may be used for exit at the same time permitting several columns to pass out simultaneously without confusing, or for files to pass in opposite directions.

There is less open space with the row of single doors—a fact worthy of attention in times of low temperature or strong winds. They are easier to move by children than the larger doors in pairs and close more surely and with a closer fit.

Again, the arrangement recommended makes any door as available as any other. Each of the doors is a unit of the same value for use as the others,



THIS ARRANGEMENT OF ENTRANCE DOORS HAS BEEN FOUND TO GIVE EXCELLENT SERVICE

distributing the traffic and reducing the chance of congestion.

There is a certain advantage to the user in having all doors alike in their action. Pupils soon learn the movements required in opening and closing of the doors—which are the same as with the doors in their homes—and learn to keep to the right. In time of fire or panic the value of this familiarity is most apparent, but it has a constant advantage in the ease with which the doors are manipulated without conscious thought.

In addition to the advantages to the inmates there are others which appeal to the builders and the caretakers. The effect of shrinkage in a pair of double doors is twice as great as in a single door, and often interferes with the security of locks or the proper connection between the latch bolt in one door with the lock strike in the other. It also makes it difficult to provide a weather-tight entrance, par-

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ticularly when the doors open independently of each other, as this type of entrance does not permit the use of an astragal.

The illustration shows a typical entrance with the arrangement of doors as proposed, viewed from the hall or corridor side. The automatic exit bars or panic bolts are such as have been made obligatory by some State enactments and the ordinances in most of the principal cities. Such fittings permit instant egress at all times but the locks can be made to prevent entrance when so desired. Door checks should be provided to keep the doors closed except when they are fastened open by hold-back attachments to the door checks or by door holders affixed to the bottoms of the doors. The entire trim is so planned that the doors cannot be locked against exit, but intruders can be kept out; the doors are normally in a closed position, are weather-tight and have the least possible shrinkage-interference with the lock action; and they can be readily provided with standard hardware from any of the principal manufacturers.

In conclusion, such a series of single doors, all in similar and active operation, affords the full and free use of each opening at all times, permits similar application to all the doors, ensures the familiarity of the pupils with the operation of each door, affords weather protection and is found more desirable in operation, viewed from any angle.

U.S. Civil Service Examinations

ENGINEER EXAMINER, CLASS A, $3,900 TO $4,800 A YEAR. ENGINEER EXAMINER, CLASS B, $2,220 TO $3,600 A YEAR. CIVIL, ELECTRICAL, MECHANICAL, SIGNAL, STRUCTURAL, TELEGRAPH AND TELEPHONE. INTERSTATE COMMERCE COMMISSION. OCTOBER 1, 1920.

The duties of these positions involve (*a*) the analysis of applications for certificates of public convenience and necessity under the Interstate Commerce Act, in the matter of the construction of new lines, the extension of existing lines and the abandonment of all or part of lines, the undertaking or abandonment of the operation, and the consolidation of lines; (*b*) field work to determine from actual conditions the correctness of claims in these applications; (*c*) in connection with the issuance or assumption of securities, the analysis of applications, the determination of the reasonableness of the proposals therein, that the work is properly chargeable to capital account, that the amounts named are reasonably required for the purposes set forth, and that the proceeds derived from the sale of securities are applied to the purposes originally proposed; (*d*) in connection with excess and guaranteed earnings, the study and analysis of expenditures for maintenance of way, structures and equipment, and the determination of the reasonableness of such expenditures.

Competitors will not be required to report for examination at any place, but will be rated upon for sworn statements in their applications.

For further information, address the United States Civil Service Commission, Washington, D. C.

American Society of Civil Engineers to Vote on Joining Federated American Engineering Societies

VARIOUS organizations of engineers have already signified their intention of becoming charter members of the Federated American Engineering Societies.

The annual convention of the American Society of Civil Engineers, held in Portland, Oregon, August 10, 1920, adopted resolutions which provided "that the Board of Direction of the American Society of Civil Engineers be directed to submit at once the question of the American Society of Civil Engineers becoming a charter member of the Federated American Engineering Societies to referendum vote to the Corporate Membership of the American Society of Civil Engineers as recommended by the Joint Conference Committee, said ballot to be accompanied by a copy of the Constitution and By-Laws of said Federation" and "that the Board of Direction of the American Society of Civil Engineers be further instructed in event of a favorable vote on said referendum to proceed at once to take such steps as may be necessary for the American Society of Civil Engineers to become affiliated with said Federation."

There seems to be no doubt that applications for membership in increasing numbers will continue to reach the Joint Conference Committee. This new Federation of engineering societies, if recruited to its fullest possible strength, will undoubtedly become a strong power, both for the good of the individual engineer and of the public. It may be that the form of organization approved at the organizing conference held last June is not perfect, and that amendments may later be found advisable, but a start in the right direction has been made, and the new organization deserves the heartiest support.

Criticism and Comment

The Editors, THE AMERICAN ARCHITECT:

In your issue of September 1, on page 300, I have just noticed a quotation possibly from a newspaper report of remarks which it would appear I made at a meeting of the Board of Jurisdictional Awards held in Atlantic City early in August.

The quotations published in the daily press were quite incomplete and hence somewhat misleading. To begin with the meeting was not one of the Board of Jurisdictional Awards, but followed the sessions of that Board. It was a special meeting called at the invitation of the American Institute of Architects and attended by an invited group of representatives of various branches of the building industry.

The particular part of my opening address, from which the quotation was taken in its complete form was about as follows:

"The situation, for instance, in New York with regard to materials is serious. We cannot get materials except at prohibitive prices. The general impression is that even if it were not for that problem of price the necessary building program could not be carried out. Contractors say there would not be enough brick, for instance, if everybody attempted to go ahead. At every point (labor and materials, etc.), the game is tied up. On every side there seem to be fences that block the way and building is being discouraged. We are not proposing our plan because we are interested in our own hide. We have in our charge a great industry—the building industry. The country has certain needs at the present time, for instance, housing. How can we supply them? As things are now, we cannot do so. Only this morning I attended a meeting of the Senate Committee on Housing. It was brought out that houses could not be built, for one thing, owing to the serious financial problem involved. Money is not going into houses. As against 20,000 apartments usually erected per year in New York the net increase of houses built over houses destroyed is something like 212 buildings. Our building industry cannot get over the financial problem when money can produce so much larger a return in other fields."

It is to be noted that the matters mentioned in this paragraph were only a few of the many subjects brought up at this meeting. The discussion also included reference to the current accusations being brought up by each branch of the building industry against some other branch; each charging that some one else in every case was responsible for the difficulties. The material men were being very generally accused of artifically raising the price of materials; contractors were being accused of collusion in bidding; labor was being accused of soldiering on the job; the bankers were being accused of withholding money necessary for the housing situation; and doubtless architects and engineers were accused with not knowing anything about their respective professions.

After a discussion of the whole building situation by men from almost every part of the country, it was agreed that a committee of thirty-three should be appointed to organize a movement in which every branch of the building industry should be asked to co-operate in an investigation of present conditions, and the means for bringing about change and betterment. It includes six representatives of each of the fields of contracting, engineering, architecture, labor, materials and three members at large.

ROBERT D. KOHN.

THE CRYSTAL PALACE FOUNTAINS

Current News

Happenings and Comments in the Field of Architecture and the Allied Arts

Women Engineers and Architects Organize

That the general advancement of women in engineering and architecture may be served, the American Society of Women Engineers and Architects has been organized with the following officers: President, Lou Alta Melton, Boulder, Col.; vice-president, Hilda Counts, Pittsburgh, Pa.; secretary and treasurer, Hazel I. Quick, Detroit, Mich.

Ancient Aztec Shrine Reveals Fine Workmanship

Another discovery, in the form of a sealed room, has just been made at the Pueblo ruin in Aztec, New Mexico, which is being excavated by the American Museum of Natural History of New York City.

Dr. Clark Wissler, curator of the museum's department of anthropology, has reported by letter to his associates in New York:

"The room is in perfect condition. The interior is plastered and painted in a brilliant white with dull red side borders and a running series of triangular designs. No room approaching this in beauty and perfection has ever been discovered in America. There are several adjoining rooms that seem to have some relation to this, but it will be some time before they can be dug out.

"What we have is obviously the holiest sanctum or shrine of these prehistoric people. There is not much in it, all the sacred objects having been removed from the altar. But a sacred seprent is carved in wood over the ceiling. It is 2½ feet long and of the finest workmanship. Nothing like it has ever been found to my knowledge. On the ceiling-beams are imprints of hands made by rubbing white paint on the palms and fingers and then pressing down upon the beams. Several strands of beautifully made rope hang from the ceiling, presumably for the support of hanging objects. On the floor were a large number of nicely-cut stone slabs, one of which was 2½ by 1½ feet and 1¼ inches thick."

Denver to Build Houses of Adobe

Adobe houses may soon be seen in Denver. House shortage and the high cost of building material recently resulted in a change of the city regulation permitting adobe construction. Several requests for permits have already been filed.

"Houses of adobe can be made durable and attractive," F. M. Ladd, city building inspector, declared in commenting on the changes. "If they are constructed properly we will not oppose their construction."

Three conditions were named in the issuance permits. They will be permitted only in frame residence districts, advice of the city building inspectors as to making adobe bricks and construction must be followed and the buildings, when completed, must be given coats of stucco.

Gorgas Memorial Contemplated

Establishment in Panama of an International Institute for the Research of Tropical Diseases is proposed as a memorial to the late Major General William C. Gorgas, who died recently in London, and whose most noteworthy health work was carried on in the Canal Zone.

The Panamanian Government, according to advices to Senor Don J. E. Lefevre, Charge d'Affairs of Panama at Washington, would be willing to donate the $1,000,000 St. Thomas' Hospital for the proposed institute. Mr. Lefevre made it known that he plans to take the matter up with the Rockefeller Foundation.

Memorial Where Washington Crossed the Delaware

The old ferryhouse and tavern at Washington Crossing, Pa., is being restored and adapted as a central building for park purposes.

All the properties on the Delaware River bank east of the River road as far as the upper end of the island, behind which boats were secreted ready for the embarkation of George Washington's troops for the attack on Trenton, have been bought by the Washington Crossing Park Commission.

This covers a river frontage of more than 1,500 feet and includes the point of embarkation and the Old Ferry road leading to it. The commission also has purchased the island and about sixty acres to the west of River road which includes the ridge behind which the Continental troops were massed and

drilled that eventful Christmas day before the battle of Trenton.

The commission has laid out a general scheme covering the territory in which Washington's troops were quartered after having been driven across New Jersey and over the Delaware River on December 8, at Morrisville. This includes the base of supplies and New Hope ferry, the uppermost ferry guarded to keep the British from crossing.

It covers the headquarters houses of Washington and eleven of his generals. At the graves of the soldiers who died it is proposed to erect monuments. Eventually the national government will be asked to build a memorial bridge over the Delaware at the point where Washington made his never-to-be-forgotten journey across the swollen river amid ice floes and dangers from an unseen foe.

Brother Architects in Vienna

It is learned from a letter addressed to the American Institute of Architects, that the profession in Vienna is at a standstill for want of work and is literally starving and dying from weakness and ill-health. An appeal has been submitted in their behalf to relieve their tragic straits, and it is hoped that all who can will send funds to them through the Treasurer of the Institute, The Octogon House, Washington, who has the matter in charge.

Housing in Norway

"An Example of Town Planning in Norway: Notes on the Development of Trondhjem," by Sverre Pedersen, town architect, Trondhjem. A 12-page illustrated reprint from the March, 1920, issue of the Garden Cities and Town Planning Magazine, giving an interesting account of the local housing history and present conditions, and the plans for the expansion of the town. The municipal factory for the manufacture of wooden houses is a feature of this work. Also reprinted from the same issue, "Housing in Norway," by Christian Gerloff, secretary-general of the Norwegian Housing and Town Planning Association; 8 pp., illustrated, outlining the prevailing plan of municipal house building and the endeavor to form public utility societies—or "building-municipalities"—for the sole purpose of building and letting houses; containing a view and description of a row of experimental houses in Trondhjem, built of different materials, with a view to testing the qualities of each. (Apply to The International Garden Cities and Town Planning Association, 3, Gray's Inn Place, Gray's Inn, London, W. C. 1.)

Cedars of Lebanon Almost Extinct

The famous cedars of Lebanon were almost wholly destroyed during the world war, according to a writer in a San Francisco periodical. The trees date back to the earliest times. They were historic during the wars of Sennacherib, 608 years before Christ, as described in the psalms of David. Pliny, the Roman historian, claimed their wood to be everlastingly durable, and the Arabs believed the trees to exist for all time. Timbers unearthed in the ruins of ancient Assyria have been found practically unchanged after 2,000 years and more. In olden times the oil from the trees was used as a cure for leprosy, and it was used by the Romans to preserve their manuscripts. Individual trees were often 42 feet in circumference and 90 feet in height, with a wonderfully beautiful spread of branches.

During the late war the Turks cut them down for fuel for locomotives and then the opposing forces continued their destruction for fuel and other military purposes.

Furniture Situation Is Acute

The American home without its conglomeration of furniture is a difficult picture to imagine, but the furniture situation indicates that we may yet see a reversion to the Japanese style, which considers a few mats and a tea table adequate equipment for housekeeping. The present high cost of labor, the decrease in lumber production, are so affecting manufacturers as to tend toward simplification and even standardization.

There has been a lull in the vogue of Chippendale chairs with their complicated legs, and in the other elaborate kinds of period furniture. In their stead makers favor such patterns as the Queen Anne style, which is simple and still has the desirable period effect.

Housing a Railroad Problem

Relief from the nation-wide housing shortage depends largely upon rehabilitation of the railroads so that building materials can be transported in large quantities, according to reports to officials in Washington.

"Building has been almost completely halted all over the country because materials cannot be obtained," said Chief Engineer Chase of the United States Housing Corporation.

"The shortage of houses now is more acute than it was at the time of the armistice, when building had been suspended for nearly three years. Little improvement can be expected until spring.

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"The priority orders issued by the Interstate Commerce Commission favoring the movement of grain and coal made it practically impossible to get meterials. In only a few cities of the middle West has any considerable building been undertaken.

"Builders in practically all big cities now are making elaborate plans to begin work on a big scale next spring. This, however, is contingent on their being able to get large supplies of brick, sand, gravel and hardware."

The country now is short five million buildings, according to estimates prepared by Mr. Chase.

To Relieve Transportation of Building Materials

At the suggestion of Mr. Daniel H. Willard, Chairman of the Advisory Council of the Association of Railway Executives, made to Hon. William N. Calder, Chairman of the Special Senate Committee on Reconstruction and Production, during his testimony, a Commitee of Representatives of the Construction Industry in Greater New York has been organized for the purpose of acting directly with the Association of Railway Executives in securing the prompt movement of construction material essential to the public interest.

It is believed the work of this committee will go far toward relieving the acute housing shortage in Greater New York.

The committee is prepared to receive applications for assistance in expediting the movement of construction materials from point of origin to destination, in cases where the ordinary routine methods have failed, and where the public interest is at stake.

The committee especially requests that applications be made to it only after the usual methods have failed to produce desired result. The suggestion of the organization of this committee by Mr. Willard indicates the determination on the part of the carriers to use the present facilities of the railroads as far as possible to relieve cases where the emergency is greatest.

Its headquarters will be at room 1605, 29 West 39th Street, New York.

Weekly Review of the Construction Field

With Reports of Special Correspondents in Prominent Regional Centers

THE movement to exempt mortgage investments from the income tax has received impetus from an analysis published by Mr. Wharton Clay, of the Associated Metal Lath Manufacturers. Railroad conditions and coal are only incidental, he says, but the minute the banks were unwilling to float loans, construction activities stopped.

The banks were obliged to stop construction loans, says Mr. Clay, not because of prices of materials but because they could not dispose of the real estate mortgages to their customers. This was largely due to the Federal Income Tax which, with its heavy Surtax on the larger incomes, makes mortgage buying at 6 per cent. absolutely impossible. Exactly how this works against the larger incomes—the sources of most of the investment money—is seen below. Continuing Mr. Clay states:

"The present agitation to make mortgages on homes exempt from Federal Tax should, therefore, be thoroughly understood by those who are in the building business, and who are now powerless to aid in the housing shortage, because loans are not available.

"No one factor is as vital to the safety of the whole country as the building of homes, and it is, therefore, the privilege as well as the duty of everyone connected with the building industry who understands this situation and whose very livelihood depends upon construction activity, to advocate legislation which will release cast sums for home-building.

"The Government—that means the people—have within their reach a very powerful force to attract sufficient capital to the construction of homes if it is only called into play. To encourage American manufacture, a Tariff was imposed, and to increase farm loans and municipal improvements, exemption from Federal Income Tax was inaugurated.

"No one can blame the man with an annual income of $50,000 for refusing to make investments that will yield but $412 on $10,000 when he can get $600. It is good business for rich man or poor, to make the investment that looks most profitable, so a unified appeal to every member in Congress for the tax exemption is now the only logical solution.

"The bulk of new money for mortgages must come from estates and individuals having such ex-

cess funds as are not available until incomes of $20,000 or over are reached. As an example, an income of $30,000 is subject to a Federal, Normal and Surtax totaling 21 per cent. in addition to the income taxes levied by several of the States. This income tax must be deducted from the gross return on the mortgage before the net return to the investor is found.

"To compete with the 6 per cent. Municipal Bond which is exempt from income tax, the banks cannot offer a $30,000 investor anything less than 7.6 per cent. on a taxable mortgage, or to the $50,000 investor anything less than 8.7 per cent. and have him come out even. With mortgages tax exempt, however, they could readily be sold at a 5 per cent. and 6 per cent. basis.

"Already the State of New York has removed the State Income Tax from mortgages up to $40,000. It is up to Congress to remove the Federal Income Tax. All people must understand the situation, because Congress responds only to popular demand.

"The building industry is at a stalemate. If new money is not provided by investors, Mr. Clay concludes, the housing shortage will continue at its alarming rate and in less than five years there will be 130 families to every 100 houses in the United States. What conditions will be under those circumstances can be best pictured by the Health Departments of the large cities that are already worrying over the rapidly spreading slum districts where the number of families obliged to live in one house is spreading disease and dissatisfaction throughout the community."

There is no doubt, as has been said many times in these pages, but that mortgage moneys must be relieved of their present disadvantage, and this will not be done until there is a public understanding of the situation.

(By Special Correspondence to The American Architect.)

CHICAGO.—Committees on construction cooperating with the railroads report slightly improved transportation conditions in Chicago, but continued slackening in building operations. Every effort is being made by the committee to hasten the shipment of material for jobs still unfinished, and in most cases satisfactory results have been obtained. When these jobs are completed the committee anticipates an enforced vacation, as very little if any new work has been started.

The rise in freight rates has made itself felt this week. Most building material has taken a decidedly upward trend. In many cases the increased rate has been added to the cost of the product. In some instances the ultimate consumer is caught "going and coming." He has to pay the increased rate to the manufacturer as well as on the finished product. Some dealers rather than add to the already heavy burdens of the consumer are shipping by truck and themselves absorbing the difference in costs. The differences in rates, however, has not created the stir expected in building circles. Predictions of heavy buying in anticipation of the increased rates did not materialize here, and reports indicate a similar attitude on the part of buyers in other cities of the middle west.

The lethargy of buyers reflects the whole construction situation. Though builders and material men welcome the prospect of improved transportation even at the cost of additional freight charge, they realize the improved transportation (though they concede the breakdown of transportation was the dominating factor in the demoralization of the industry) cannot, alone, set the industry on its feet. But they assert confidently, in the face of the bleakest outlook the construction field has faced in years, that given the co-operation of finance and labor as well as improved rail facilities, spring will see the greatest boom in construction ever known, for the demand exceeds anything in construction history.

(By Special Correspondence to The American Architect.)

SEATTLE.—Automatically adding the new emergency freight rate, the jobbing trade has advanced the cost of all steel products without affecting the intrinsic price to the point of curtailing an already limited Pacific Coast demand. Jobbers state, however, in explanation that builders have become so reconciled to price advances that they are making little comment.

Stocks are very low along the Coast in steel pipe, with three-quarter inch galvanized as a conspicuous figure in that regard. The movement of pipe is principally for residences, with little in the way of large jobs that has not been taken care of. Heavy steel building stocks are fair, due to the fact that the Eastern mills hurried delivery before the freight advance, and the Pacific Coast is in a good position. Reactionary tendencies are expected to follow, however, and reduction in the volume moved is among the prospects for the next ninety days. The mills are accepting orders for the last quarter, but jobbers will be satisfied if they can get delivery on steel accepted in the second and third quarter. Generally little improvement in arrivals is expected for the balance of the year.

Enamelware advanced ten per cent. outside the emergency freight rate. The mills say they will make no promises as to delivery on cast iron and

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malleable plumbing fittings. The mills explain failure in production in the statement that it is difficult to get cars for moving the raw products to the mills. Stocks are so badly broken that jobbing houses are borrowing from each other and from one Pacific Coast branch to another to fill urgent orders. Two of the larger Eastern mills have closed and jobbers who had placed orders for the Pacific Coast territory have been compelled to cancel with consumers. One of the dominant reasons for a slow filling up on the larger sizes of pipe was the decline in the demand from Japan, which because of its financial panic quit buying everything that was offered. There is an impression on the Coast that with the new high revenues, the carriers will make the cars work harder and will reduce the strings on the bad order tracks that the transportation problem may be simplified for the building trade within the next sixty days.

Small angle and channel irons are very slow in arrival. The nail situation is brighter. The mills are now said to be taking a profit on the last advance, and the export demand through Pacific ports has decreased. Japan has been a heavy nail buyer.

Plaster is scarce. Cement stock is light and all orders are taken subject to delay in delivery. North Coast jobbers have absorbed the freight advance on fire clay. Hydrated lime has advanced 18 cents per barrel and cement $1.50 per ton by reason of the new freight rates. There is plenty of wall board at $55 per 1,000 spuare feet, warehouse basis. The Government has asked for bids for 25,000 square feet of wall board for work in Alaska. Galvanized wire is scarce but metal lath is plentiful. The brick market is steady, with ample supplies and a steady price list.

West Coast fir mills are absorbing the new freight differential, and to the Eastern buyer the market is steady. New business will remain at a low point until the railways secure competitive rate against Southern pine. Only 922 carloads of Eastern business was placed during the week, or 1,300 cars under normal, 30,000 feet to the car. This business was for non-competitive territory. Stocks of dry lumber at the West Coast mills were 45 per cent. over normal, and these stocks must be loaded and moved East before the rainy season, due now at any time, sets in and soaks them. Activity in getting these stocks on the rails is likely to weaken the market. Red cedar shingles are weak at $3.75 to $3.80 for standard stars and $4.50 to $4.55 for clears—basis to the trade.

(By Special Correspondence to The American Architect.)

BOSTON.—The readjustment of business which has been going on for several weeks continues. In some lines of business there is evidence that the process is about completed. There is a distinct note of returning confidence. Curtailed buying in both wholesale and retail is a feature of the situation, though there is a very fair distribution of goods going on all the time. The most impressive obstacle in the way of immediate improvement in New England is the lack of coal. The priority order which promised to relieve the situation was rescinded.

An officer of one of the largest construction companies reported that new industrial buildings were being held up due to the acute coal situation. In many instances the mills have not enough to go through the next forty days.

The report of the Public Employment Office for August shows a decided improvement in the labor situation from July and from August, 1919. There has been very little demand for help in the building trades, but a fair demand for carpenters and painters for renovation work, which has been easily filled. The demand for factory workers is good, but the supply is exceedingly limited.

Reports of building and engineering operations in New England show that contracts awarded between January 1 and September 1, 1920, amounted to $233,453,000, as against $135,925,000 for the corresponding period in 1919; $113,859,000 for 1918; $138,994,900 for 1917; $139,065,000 for 1916; $117,539,000 for 1915; and $119,384,000 for 1914.

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